

Smithsonian Institution
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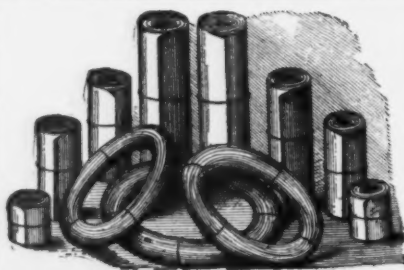
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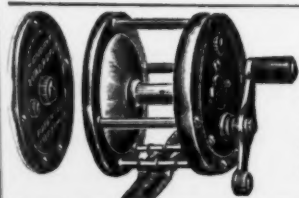
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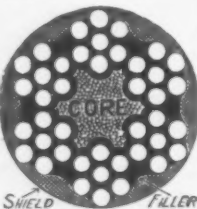
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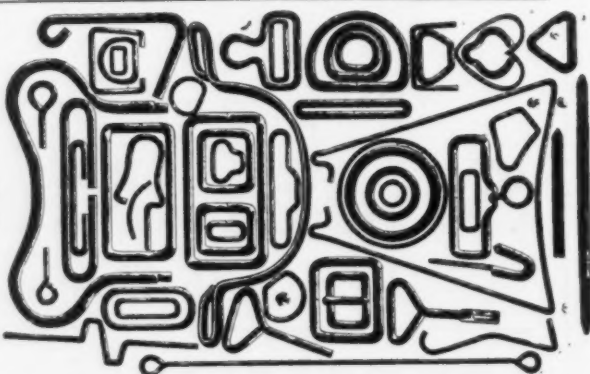
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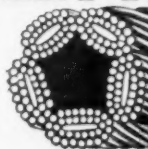
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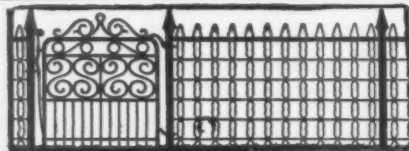
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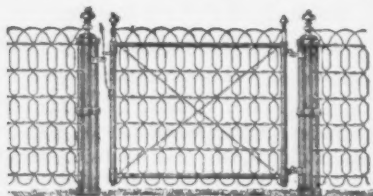
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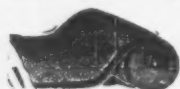


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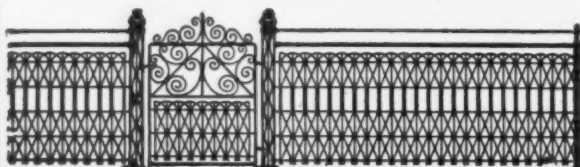
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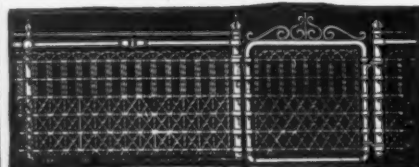
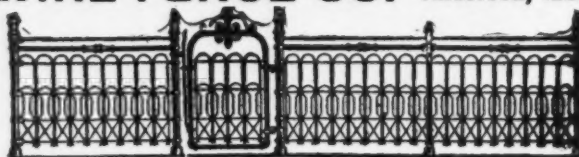
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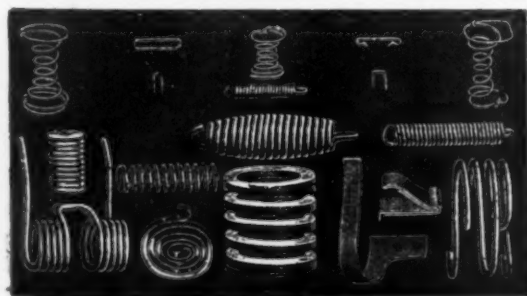
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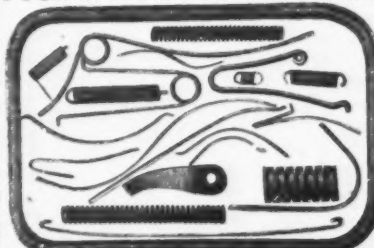
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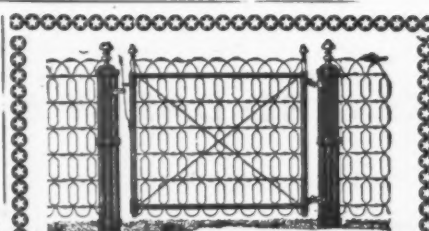
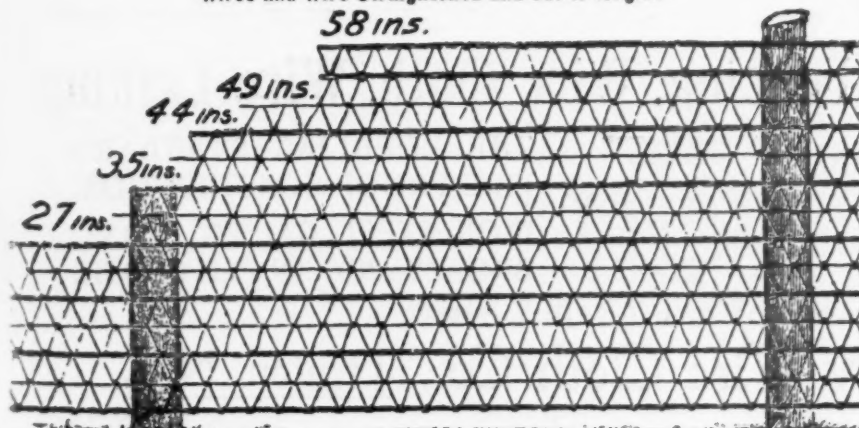
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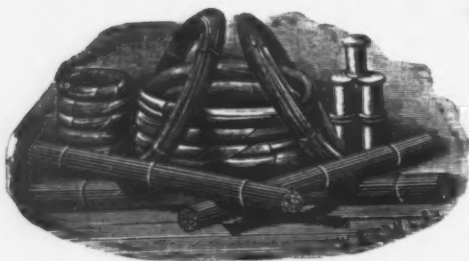
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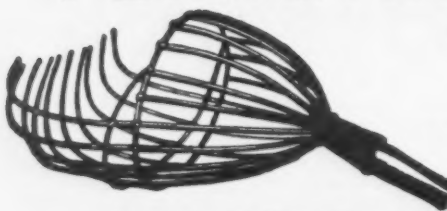
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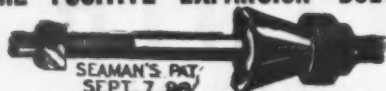
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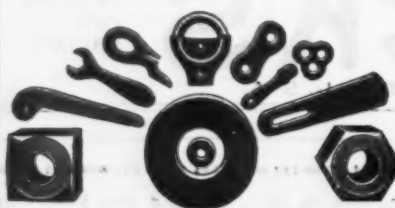
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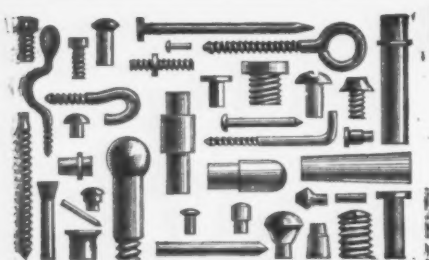
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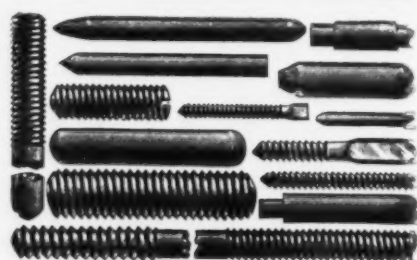


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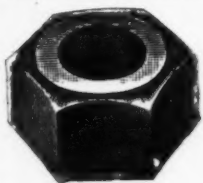
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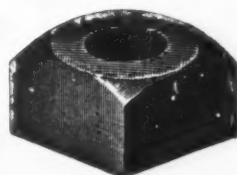
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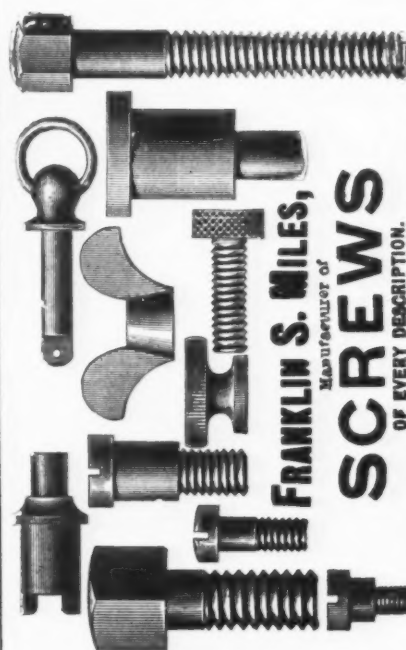


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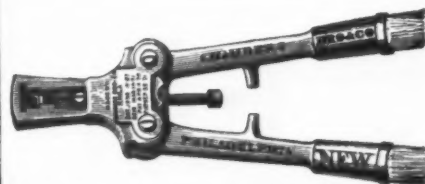
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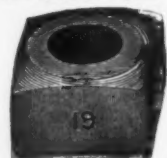
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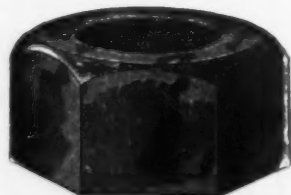
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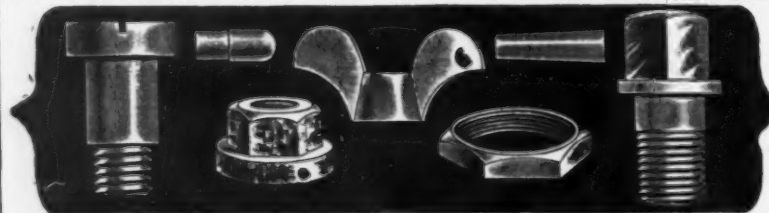
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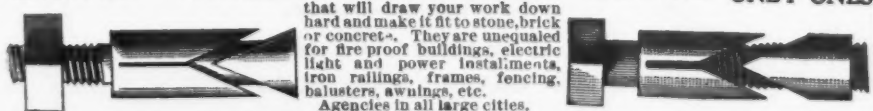
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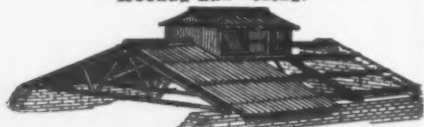
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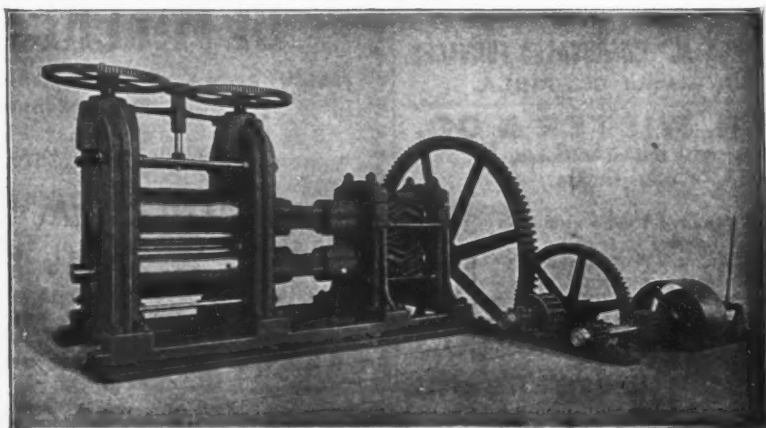
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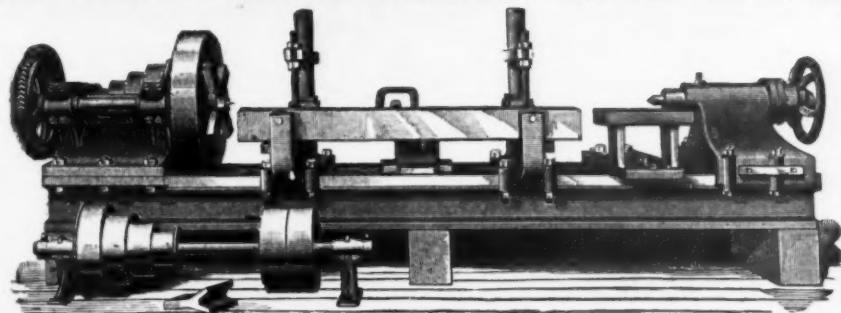
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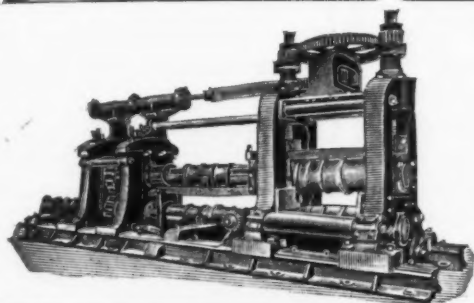
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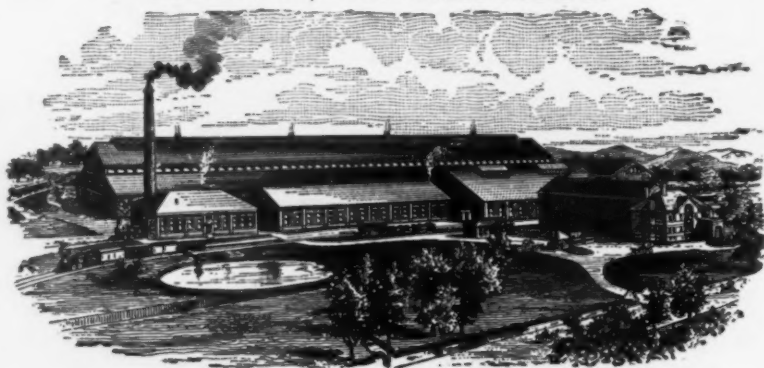
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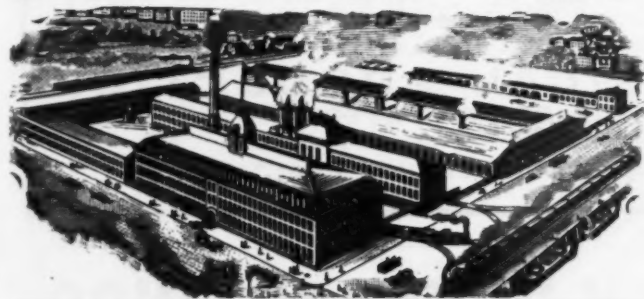
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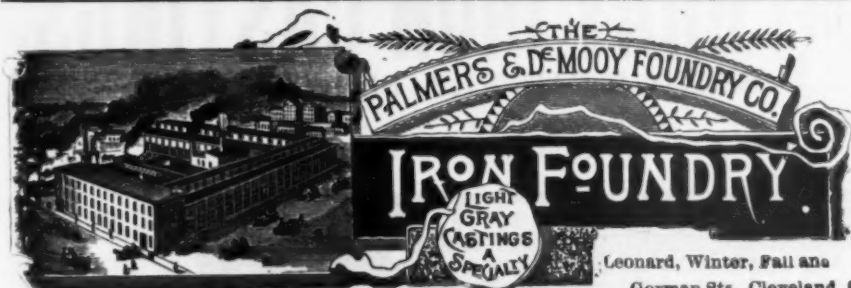
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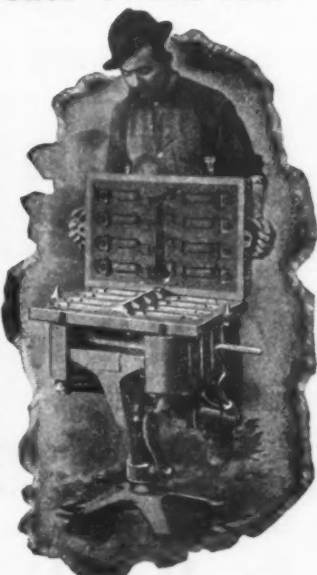
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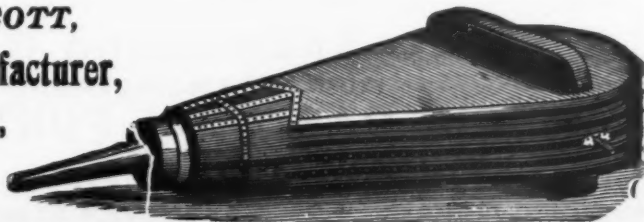
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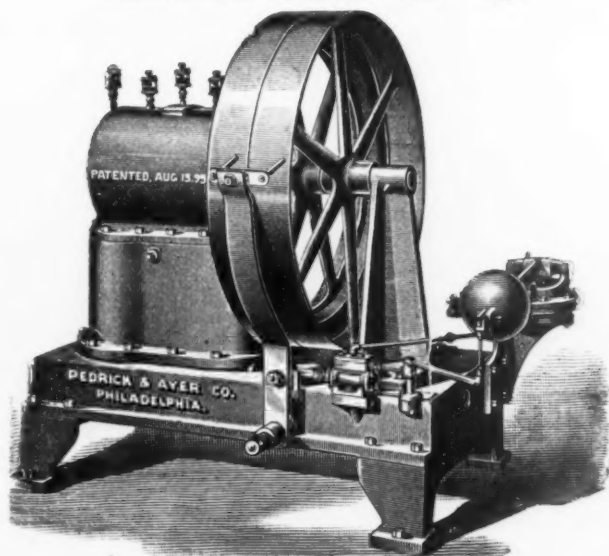
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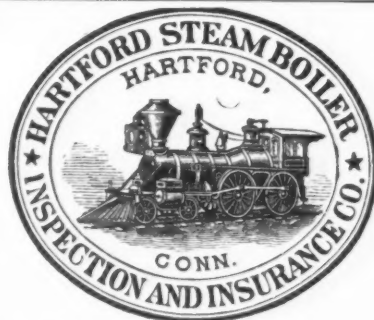
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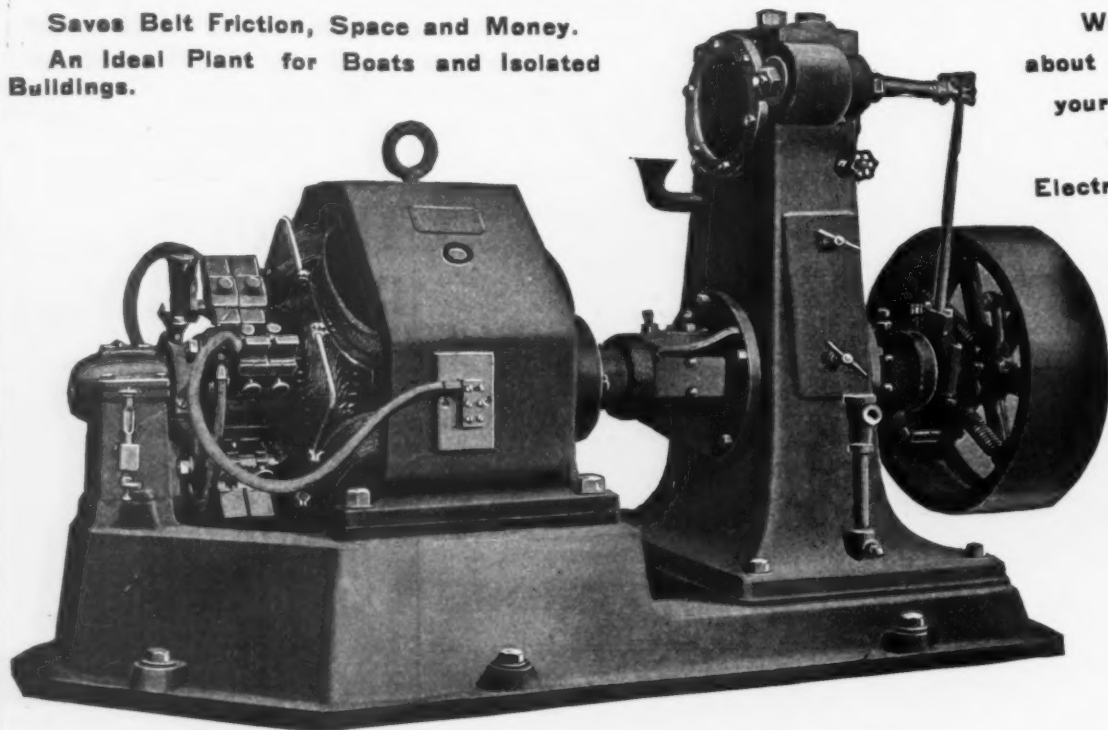
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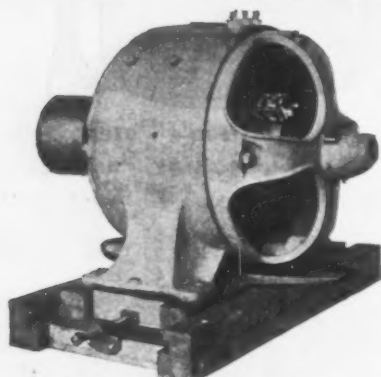
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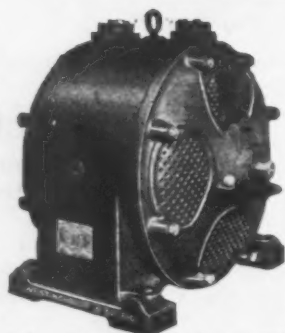
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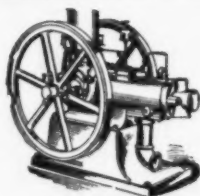
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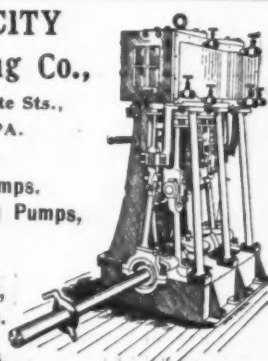
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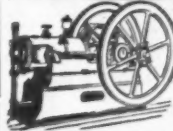
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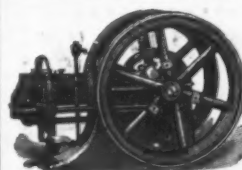
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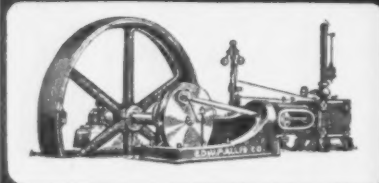
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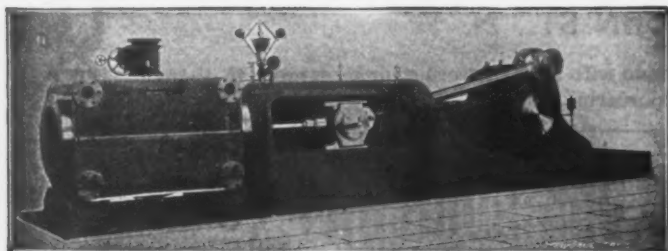


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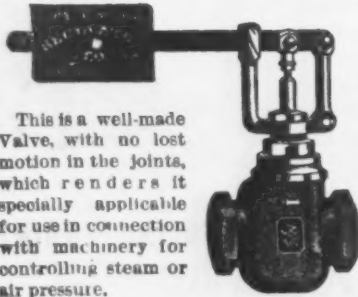
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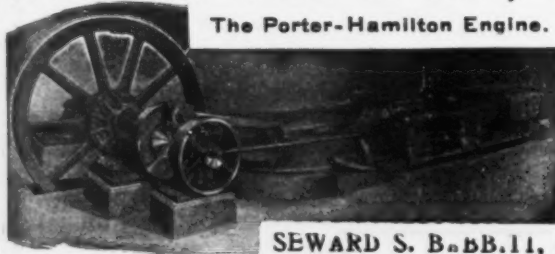


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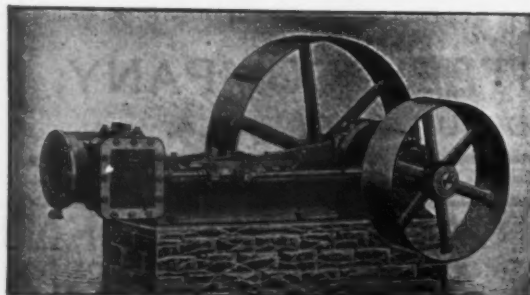
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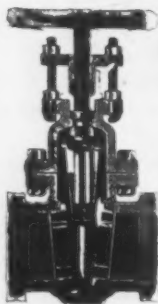
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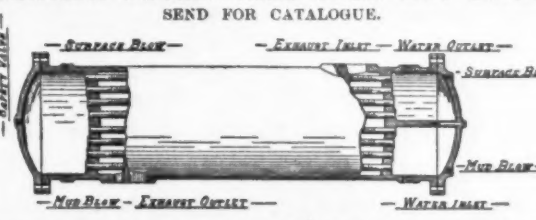
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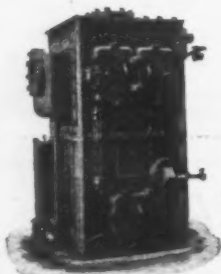
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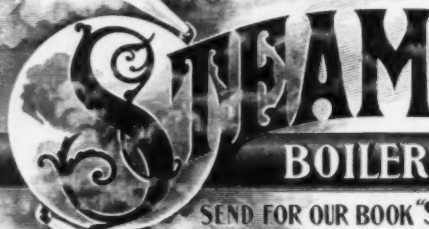
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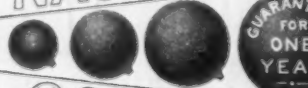


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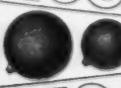
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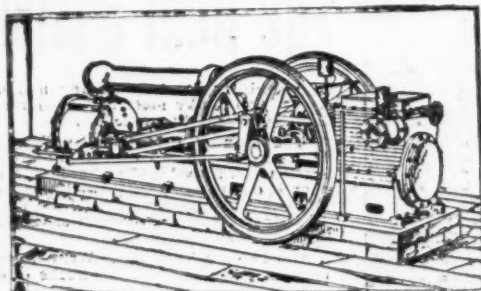
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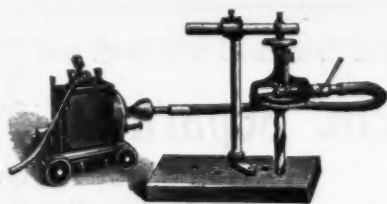
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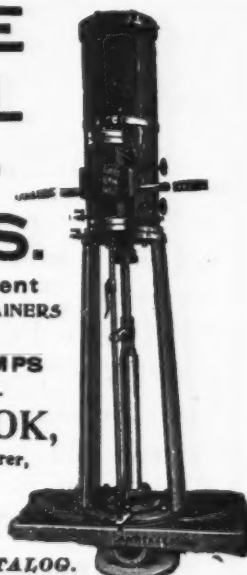
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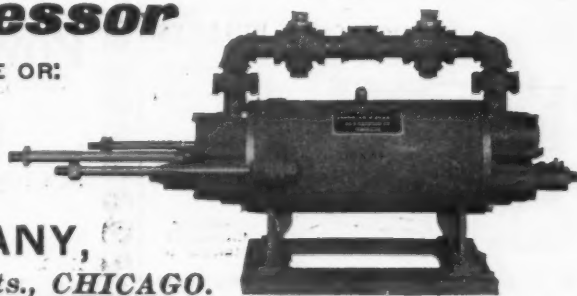


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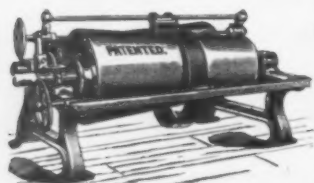
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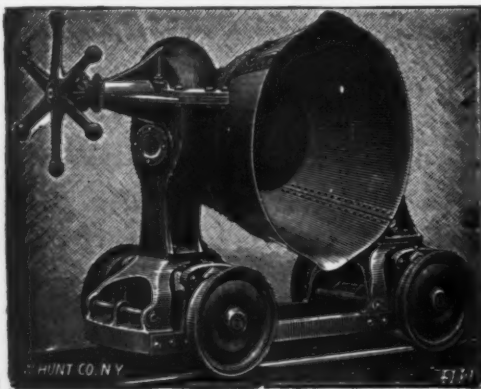
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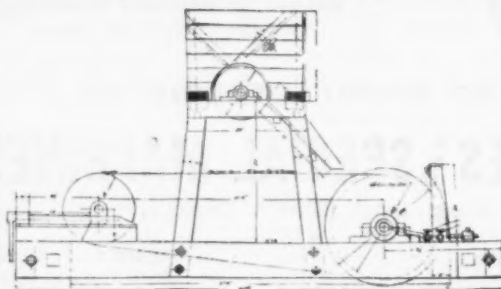
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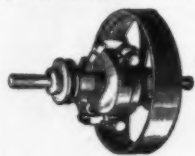
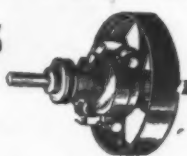
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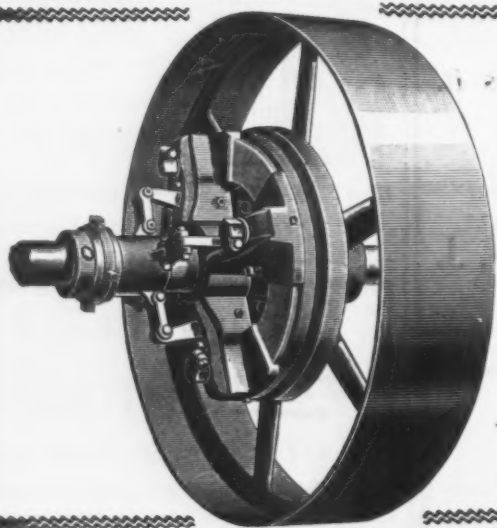
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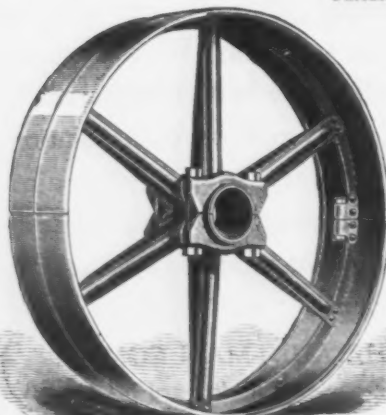
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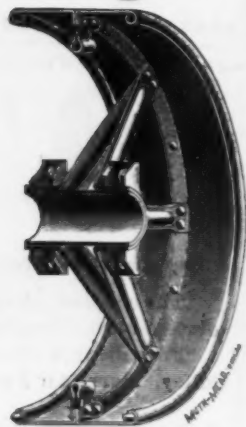
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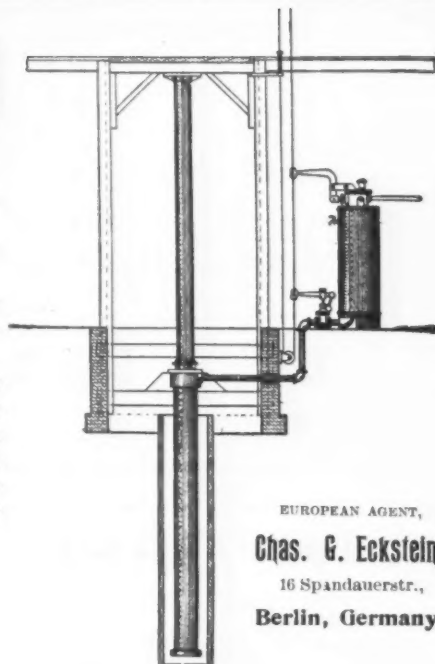
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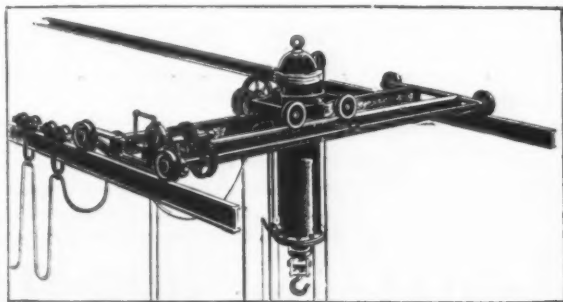
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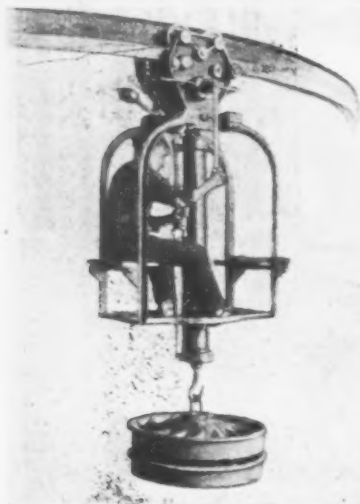
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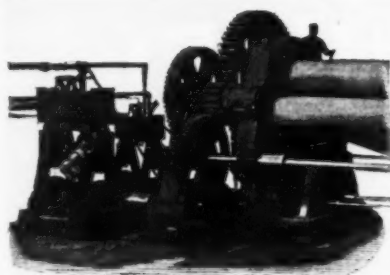
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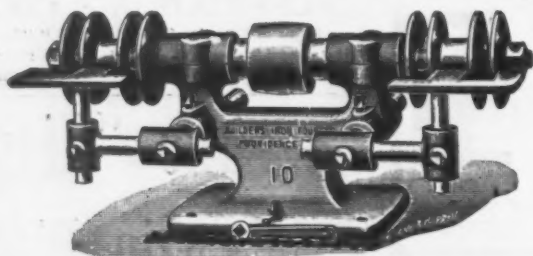
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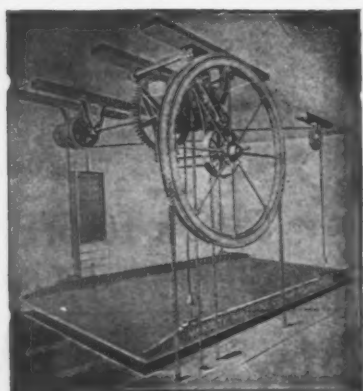
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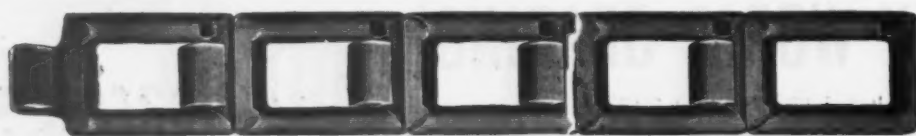
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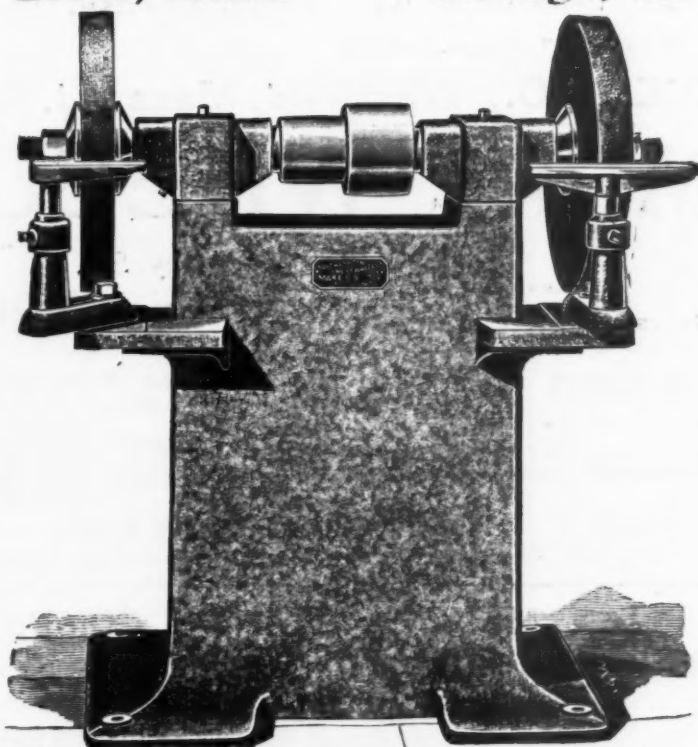
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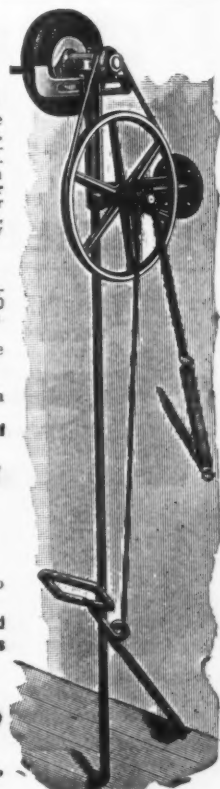
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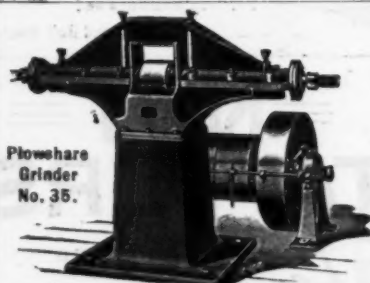
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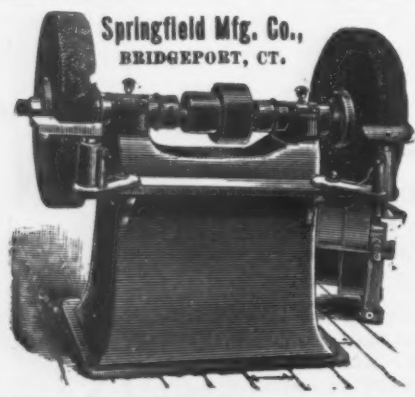
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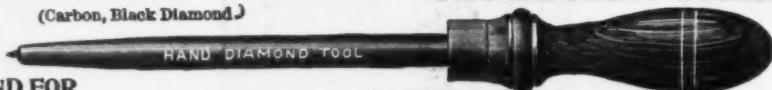
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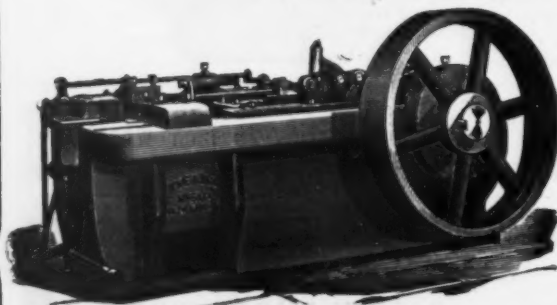
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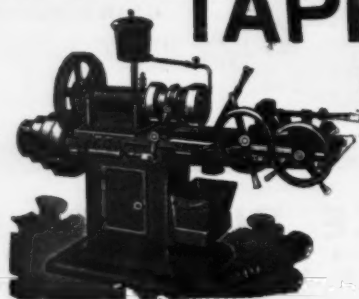
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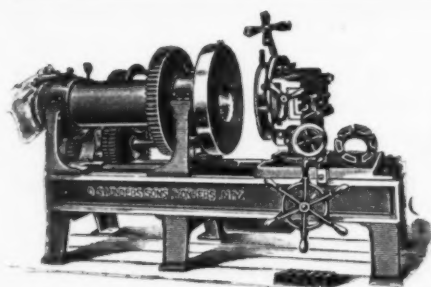
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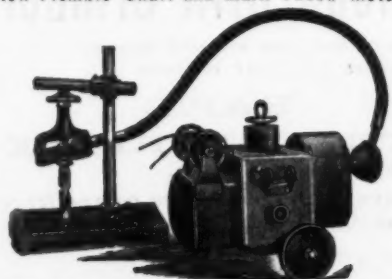
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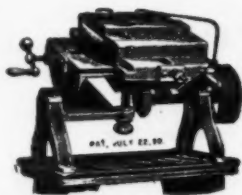
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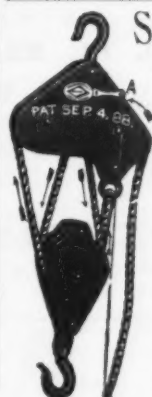


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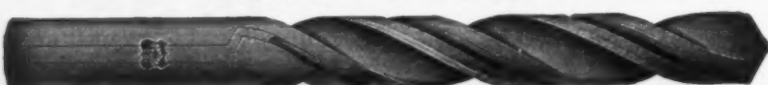
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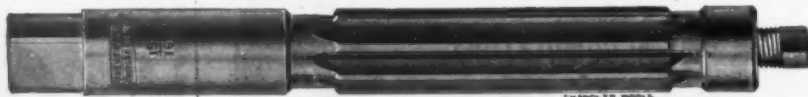
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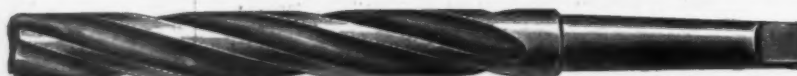


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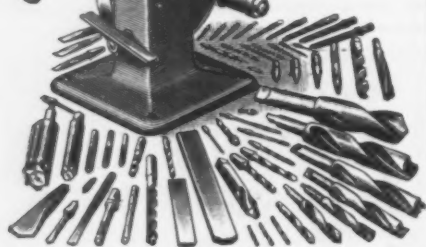
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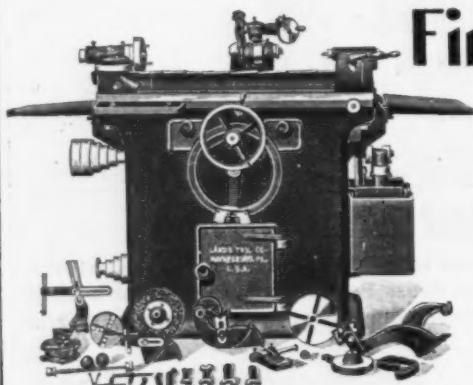
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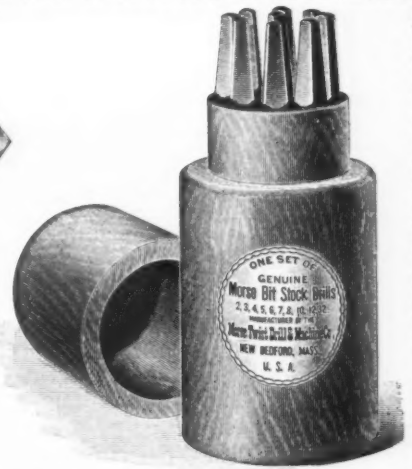
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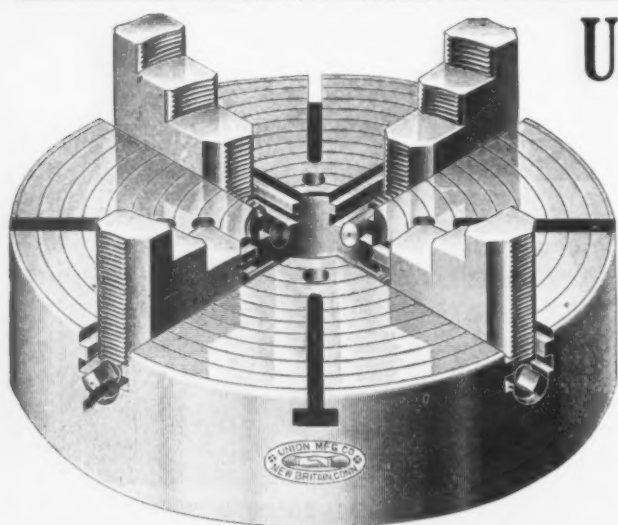


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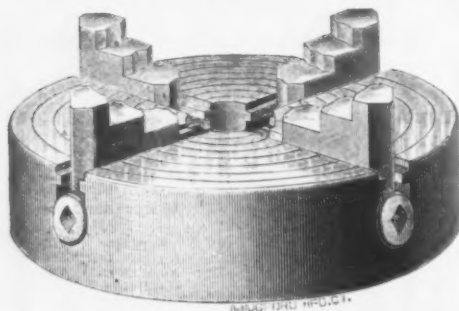
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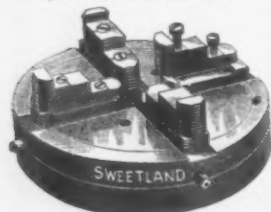
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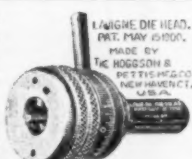


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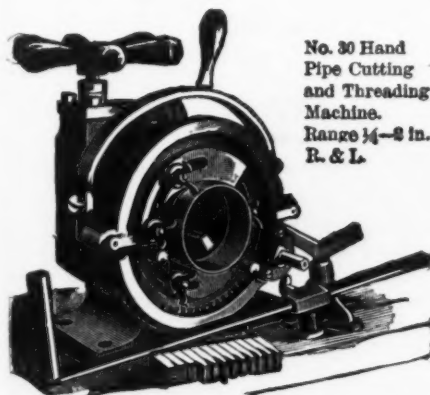
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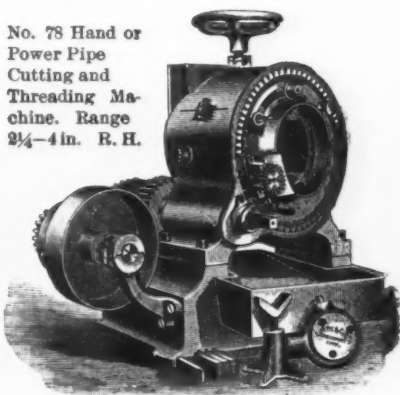
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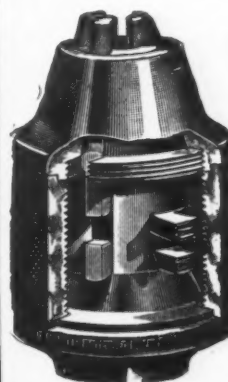
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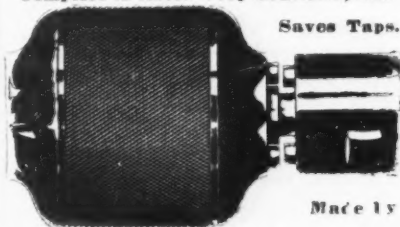
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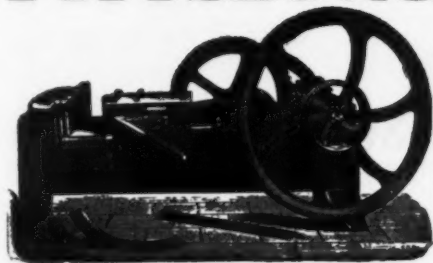
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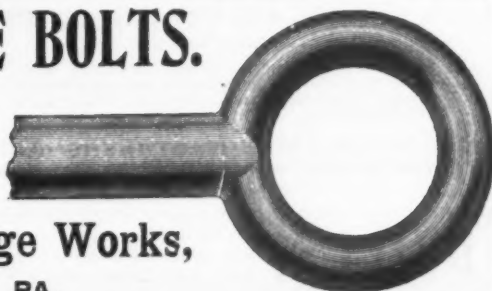
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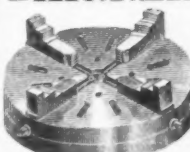


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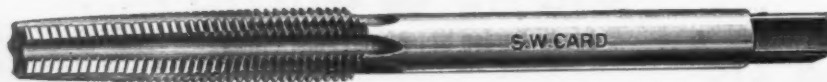
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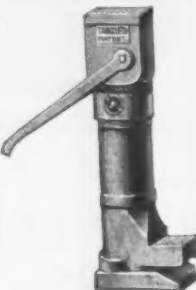
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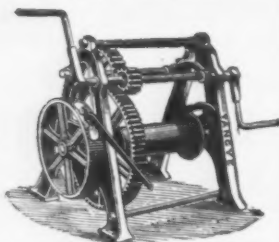
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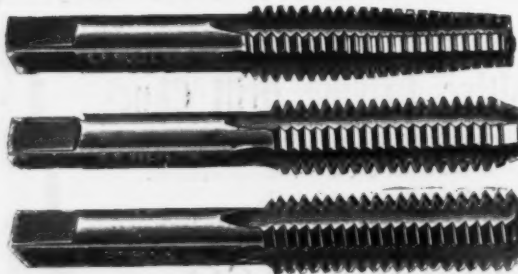
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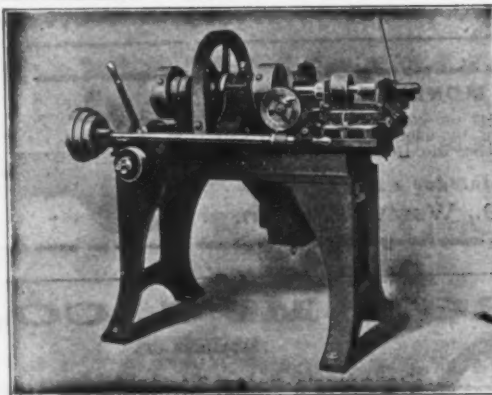
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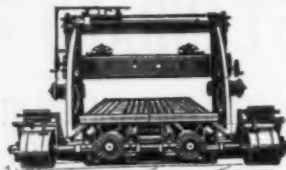
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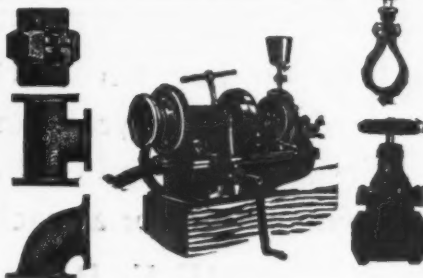
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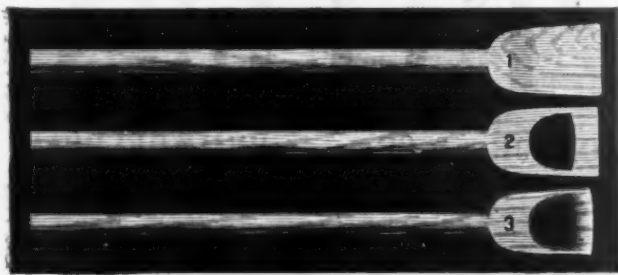


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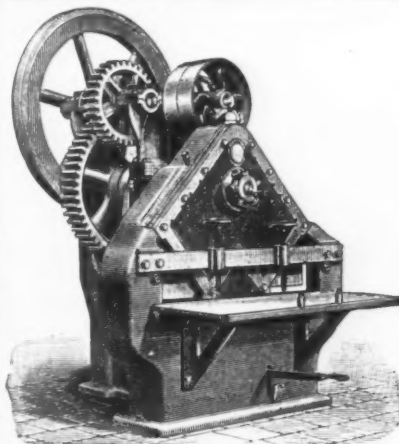
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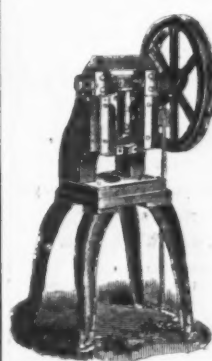
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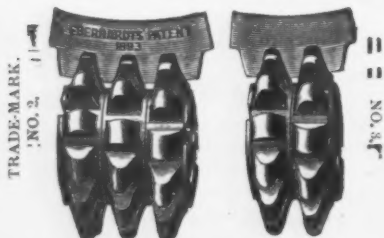
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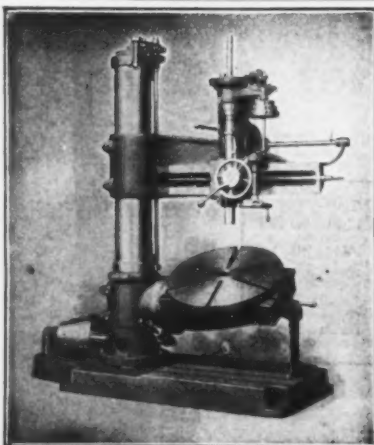
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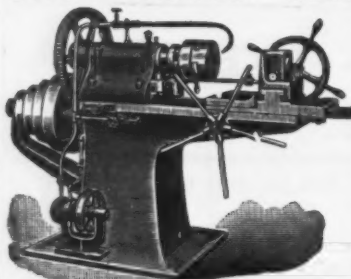
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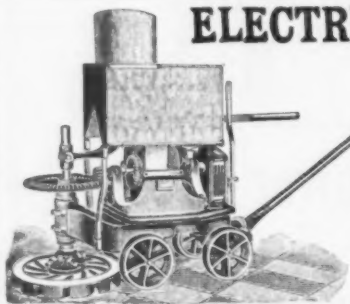
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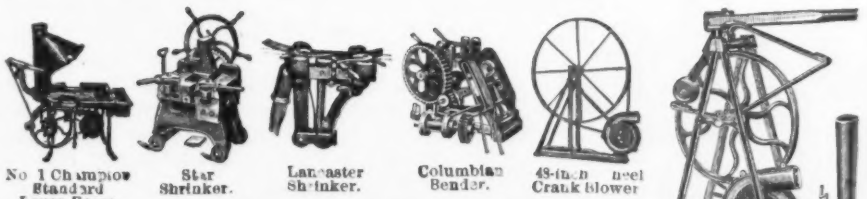
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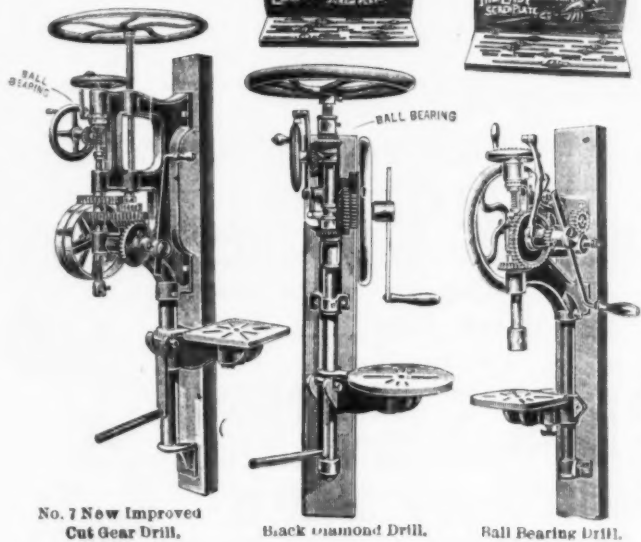
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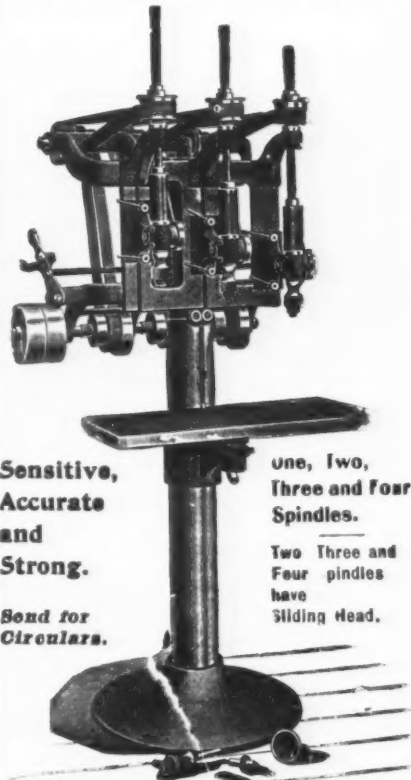
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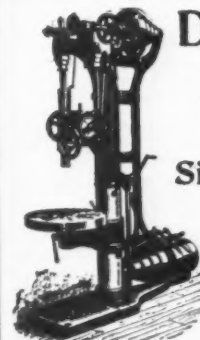
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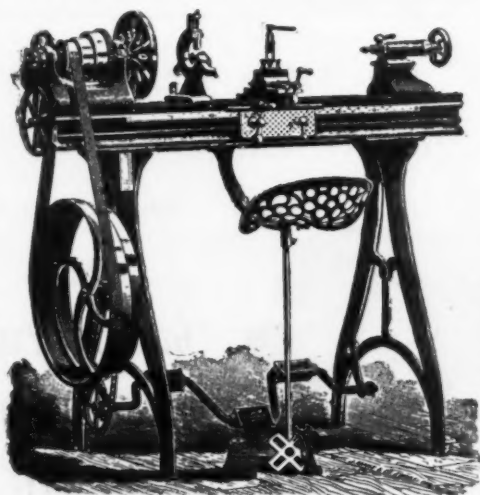
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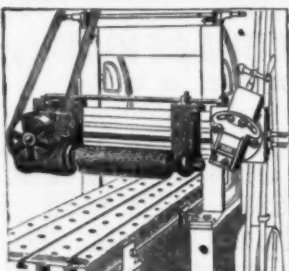
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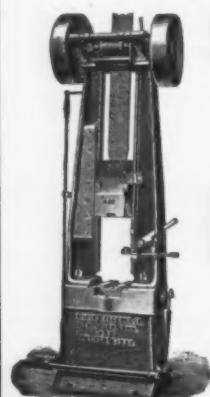


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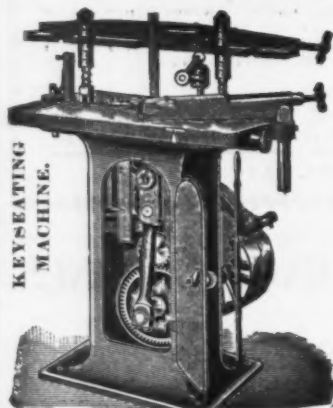
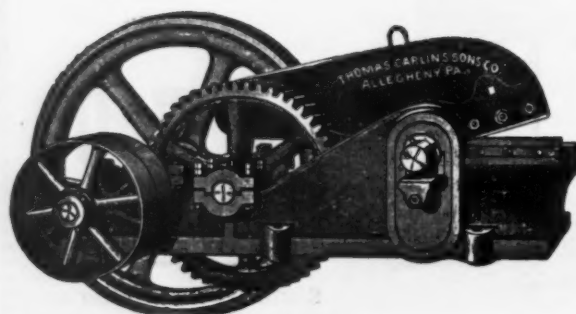


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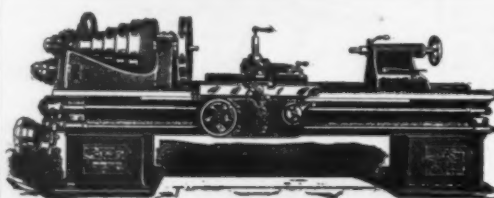
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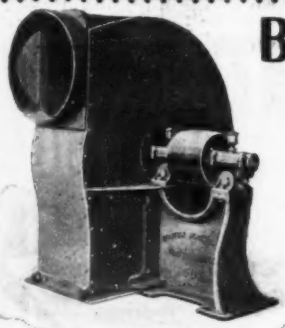
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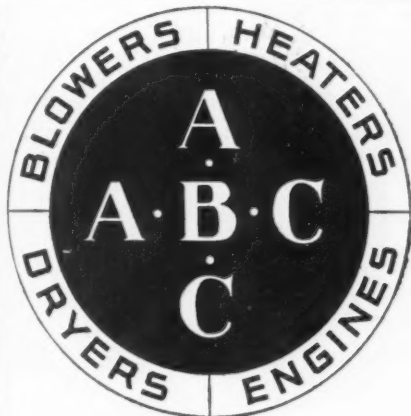
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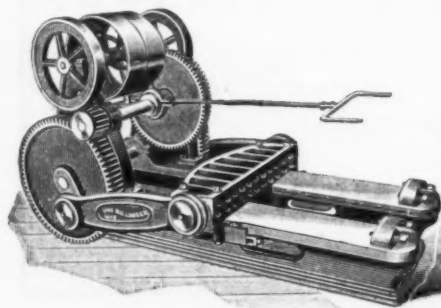
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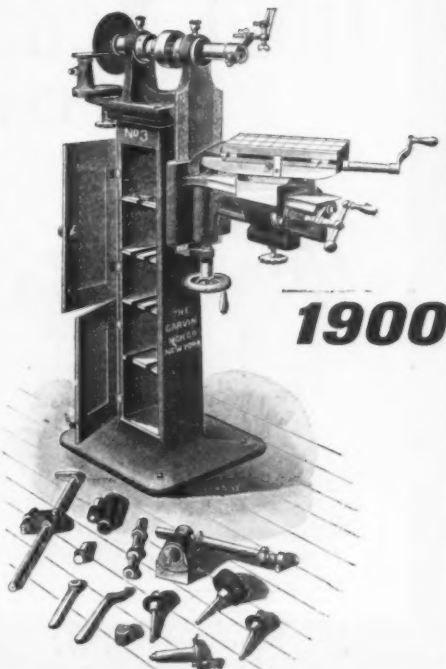
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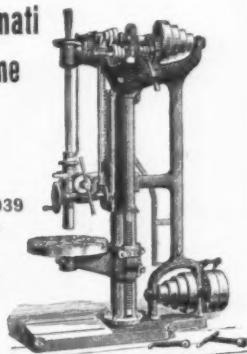
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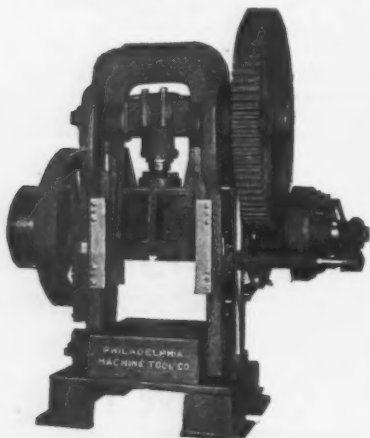


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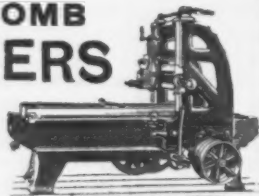
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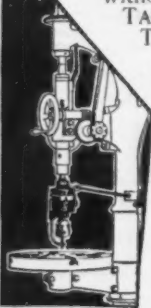
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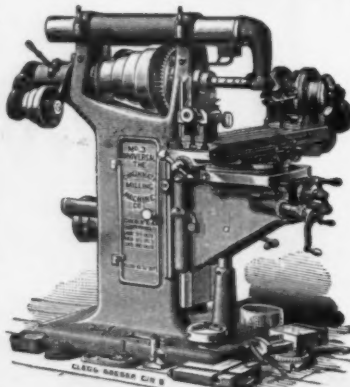
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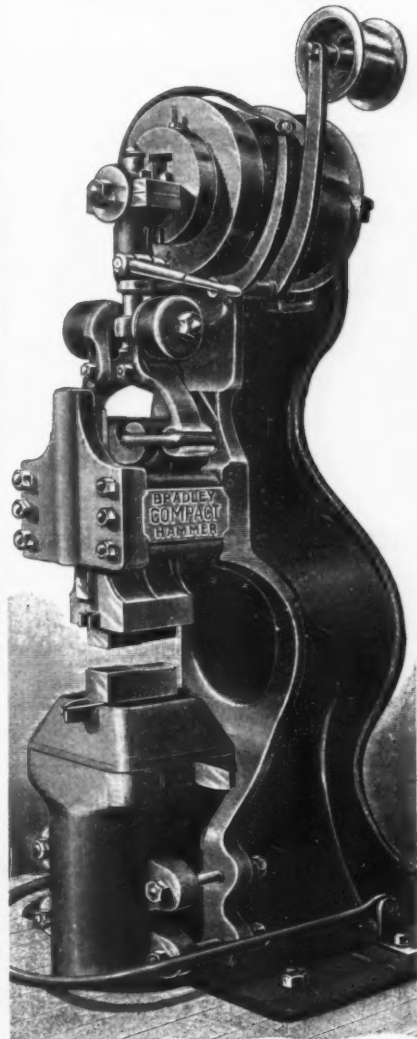
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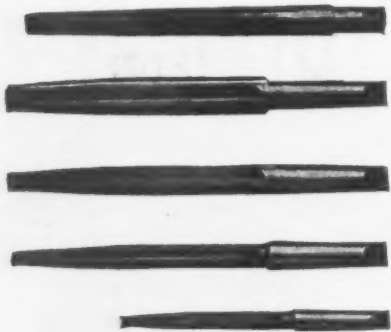
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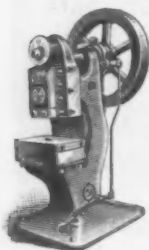
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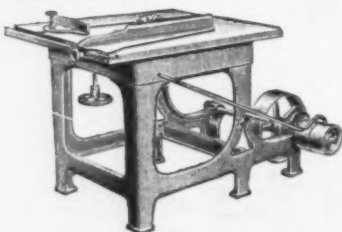
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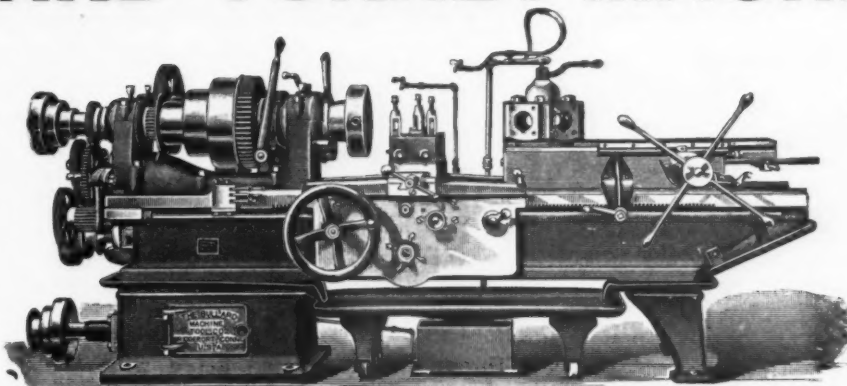
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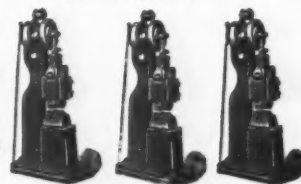


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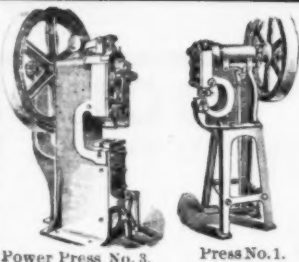
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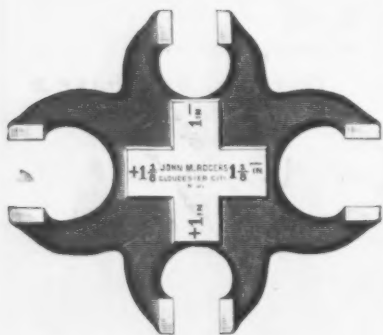


FIG. 14.

For testing bar iron on
its receipt, afford a pro-
tection against mistakes
and annoyances coming
from off-sized iron.



FIG. 13.

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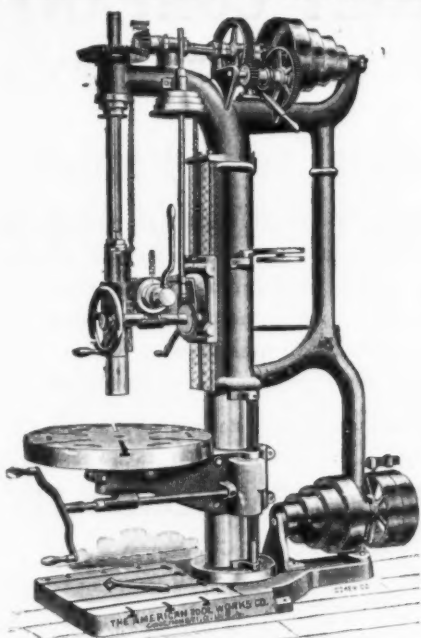
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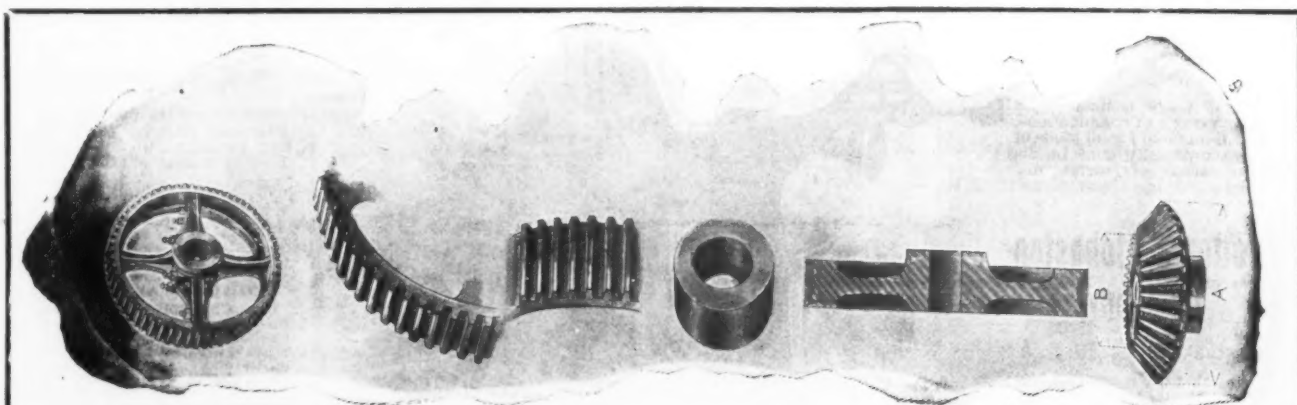
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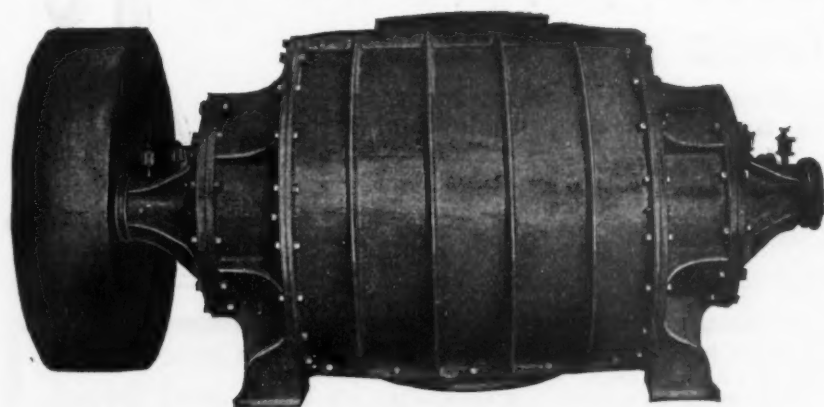
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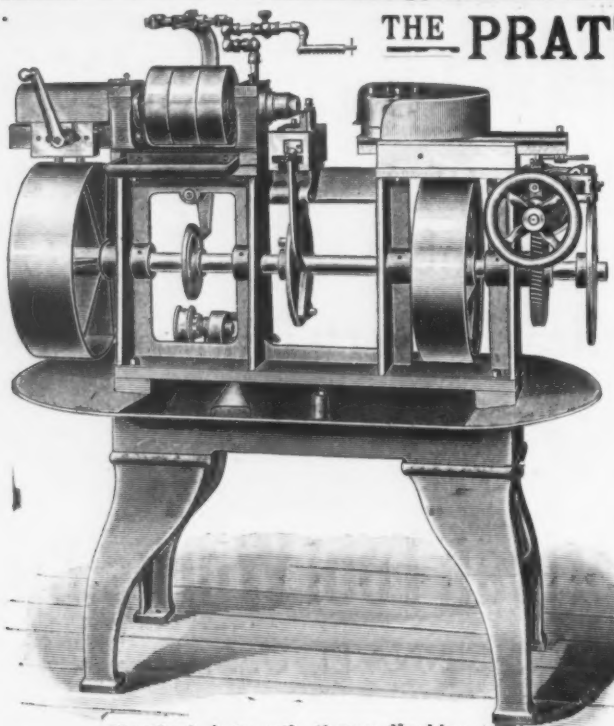


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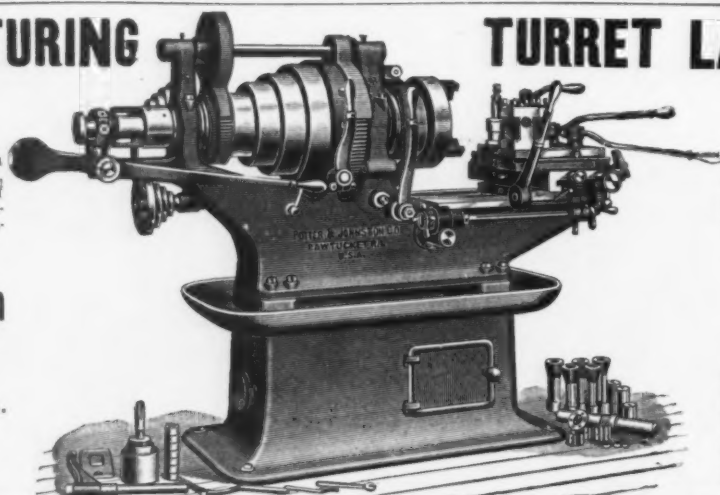
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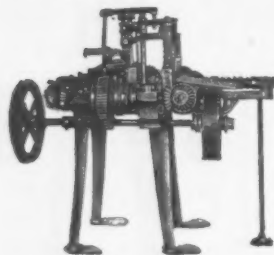
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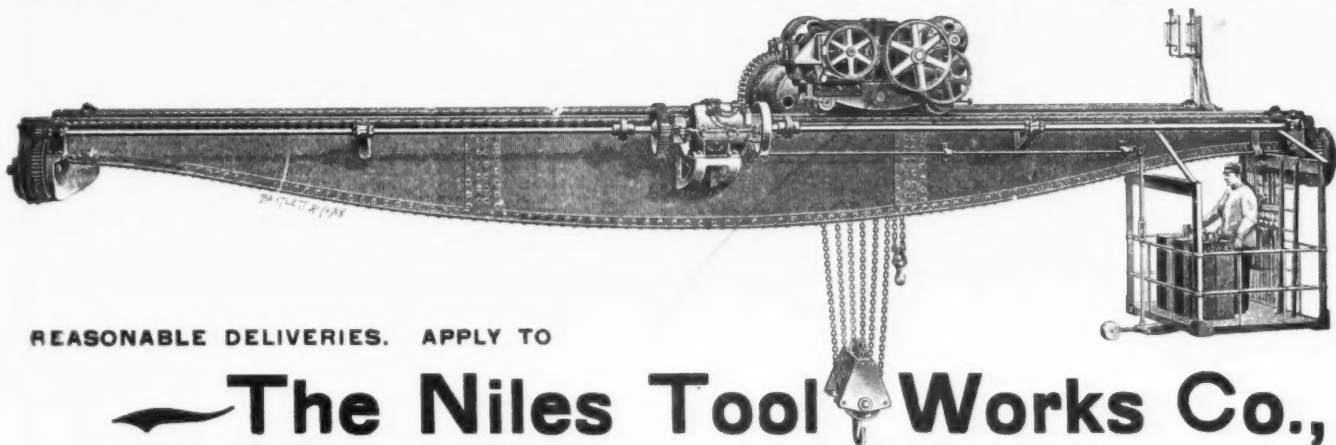
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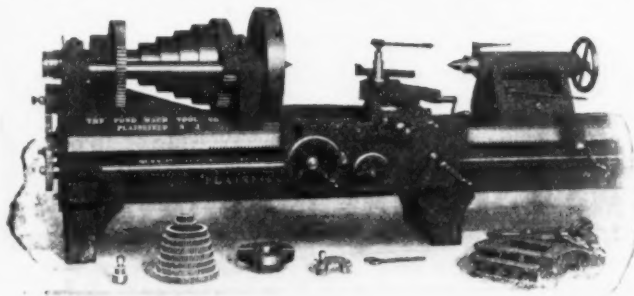
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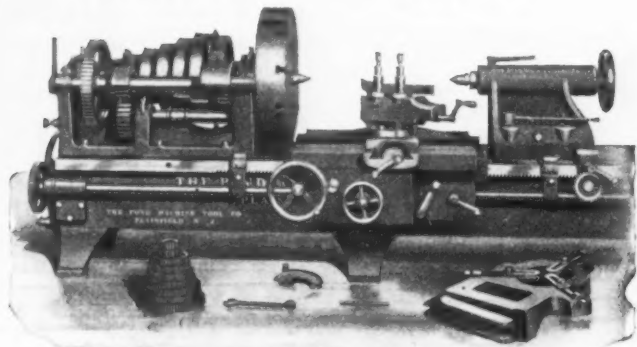
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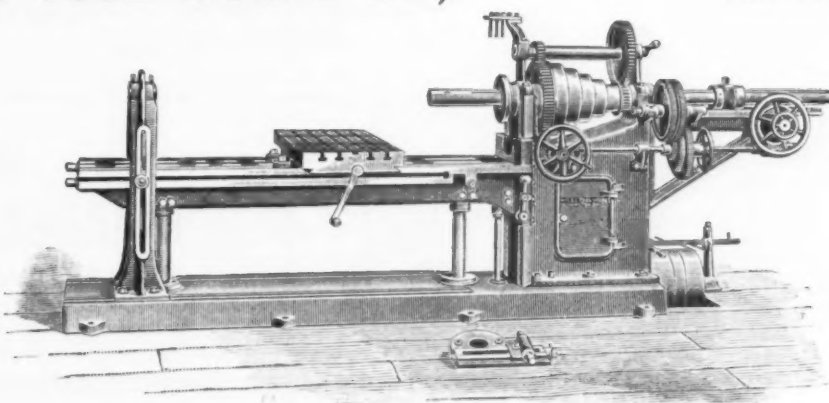


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Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5.

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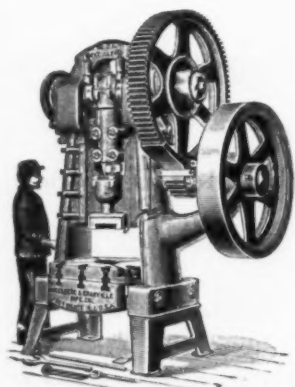
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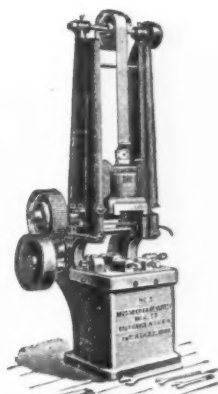
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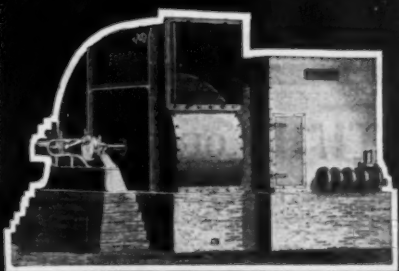


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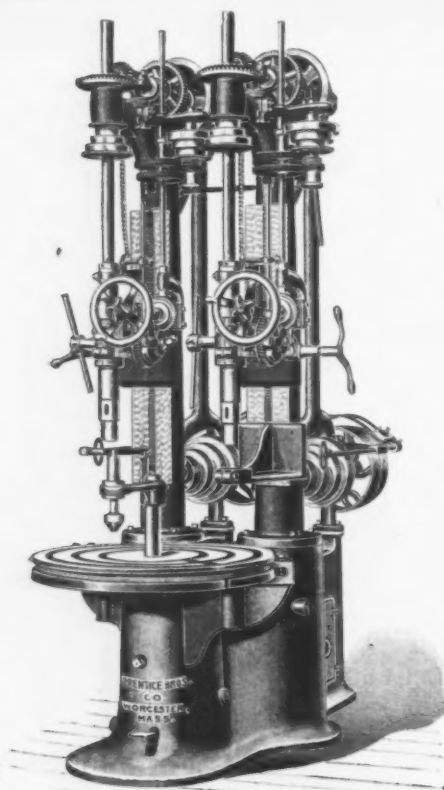
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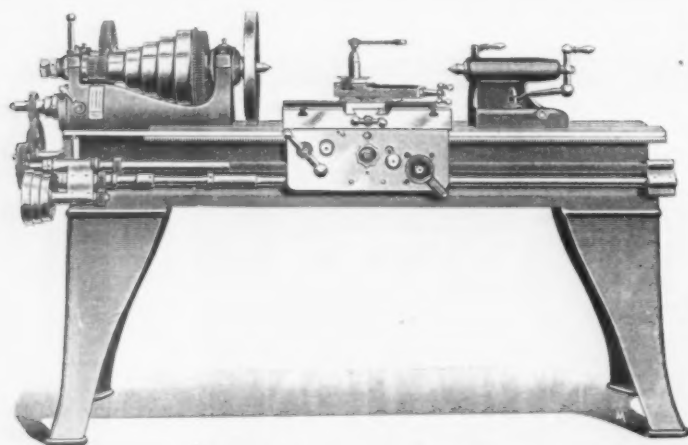
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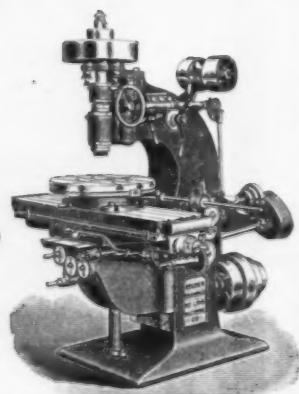
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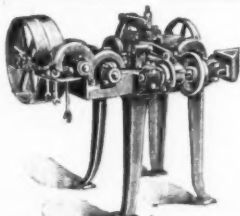
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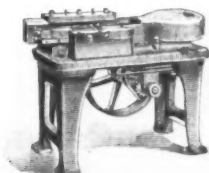




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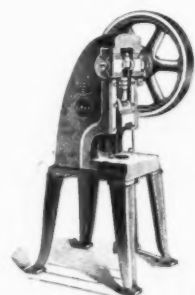
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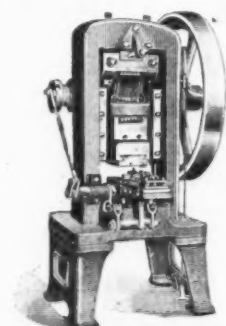
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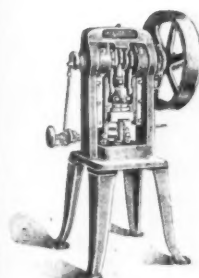
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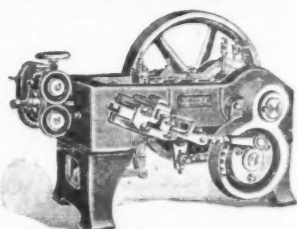
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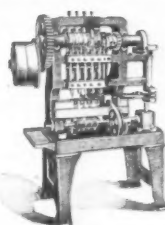
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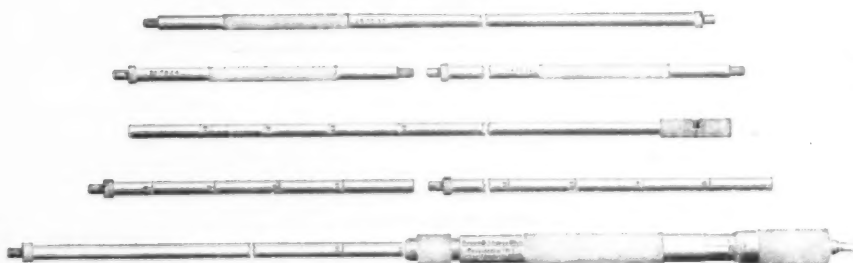
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Second-Hand Machinery

36 in. Snyder Drill, with revolving table; has 34 in. Chuck fitted.
14 x 6 Flather Lathe; plain rest.
14 x 6 Reed Lathe; elevating rest.
14 x 6 Springfield Muller Lathe; compd. rest; taper attach.
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13 x 5 Lodge & Davis Square Arbor Brass Lathe.
15 in. Hendey Shaper.
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No. 1 Slate's Milling Machine.
25 lb. Justice Hammer.
36 in. Walcott Gear Cutter.
No. 10 Buffalo Steel Pressure Blower.

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We offer at a low price, before removal, partial equipment of the Reading Bicycle Works:

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1 18 in. x 8 ft. Oakland Lathe, Cpd. Rest.
1 20 in. x 12 ft. Putnam Lathe, " "
2 22 in. Snyder Drills, complete.
1 14 in. Lodge-Davis Sensitive Drill.
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1 No. 4½ Milling Machine, Brainerd.
1 Cincinnati Reamer and Cutter Grinder, Universal.
1 Worcester Twist Drill Grinder.
1 Hack Saw.
4 15-16 in. Wire Feed Screw Machines.
1 15 in. Lodge & Davis Shaper.

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AIR COMPRESSORS.

CLAYTON DUPLEX, 14 in. x 14 in. x 15 in., in good condition, ready for service.
HAL DUPLEX, 10 in. x 14 in. steam cylinder, 14 in. x 14 in. air cyls.; fine order.
Good 22 in. x 42 in. WRIGHT CORLISS ENGINE, 14 ft. 6 in. belt wheel, 35 in. face.
36 in. x 36 in. ENGLISH PLANNER, 24½ in. x 7 ft. table; good condition.
Above will be so cheap for immediate delivery.

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ENGINES.

1 22 x 40 x 48 Wright Cross Comp. with condenser.
1 75 horse, 60, 40 and 30 Hoz. Engines.

BOILERS.

1 100 horse Hoz. Tubular, manhole under tubes.
1 75 " "

DYNAMOS.

2 100 K. W. Direct Connected, used at Waldorf Hotel.
1 50 " "
1 Belted dynamo each, 300 lights, 400 lights and 200 lights.
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Engines, Boilers, Pumps, Heaters, Iron and Wood Working Machinery, all makes, all kinds. Shafting, Pulley Hangers, Boxes, etc. Mining, Cupola and Forge Blowers. We make a specialty of Saw and Planing Mill Machinery.

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USED ONLY THREE MONTHS.

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IN FIRST-CLASS SHAPE.

1 Brainard Miller, No. 26, with centres.
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1 Brainard Hand Miller, small size.
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1 Prentice 2 1 inch Drill, B. C.
1 Woodward & Rogers 2 Spindle Drill.
1 Woodward & Rogers 4 Spindle Drill.
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1 Perkins Press, No. 5.
And many others.

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SECOND-HAND MACHINERY.

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1 48 in. x 48 in. x 14 ft. New Haven Planer.
1 54 in. x 54 in. x 30 ft. 4 Head Planer.
1 32 in. x 32 in. x 12 ft. 2 " "
1 30 in. x 30 in. x 8 ft. Planer, A1.
1 52 in. x 24 ft. 6 in. Rod Feed Lathe, Cheap.
1 12 in. Crank Shaper, Cheap.
1 14 in. x 42 in. Morgan Steam Hammer.
1 Plate Planer, 1-anes 16 ft. long.
1 800 lbs. Merrill Drop.
2 600 lbs. " "
1 25 lbs. Bradley Helve Hammer.
1 Combined Punch and shear, cuts and punches ½ in.
1 Sand blast outfit, complete.
1 20 in. x 42 in. Wright latest improved Engine.
1 200 H. P. Berryman Feed Water Heater.
1 6 ft. 6 in. Gap, 50 ton Hydraulic Riveter.

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36 in. x 72 in. Corliss Engine, 50-ton Wheel.
32 in. x 60 in. " 30 " "
250 H. P. Compound Westinghouse Engine.
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Surface Condensers.
Jet Condensers.
16 in. x 16 in. Ball & Wood Engine.
15 in. x 16 in. " "
18½ in.-31 in. x 18 in. Cross Compound Armington & Sims Engine.
15 in. x 14 in. Erie Automatic Engine for direct connection to Dynamo.
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10 in. x 12 in. Ball & Wood Engine.
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112 in. x 5 ft. Le Blond Tool Room.
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216 in. x 6 ft. Ames Man'g Co.

518 in. x 6 ft. Fuller, R. & F.
218 in. x 8 ft. Fuller, R. & F.
128 in. x 10 ft. White, taper, "old style."
127 in. x 10 ft. D. W. Pond, comp. rest.
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136 in. x 13 ft. back geared turning.
140 in. x 16 ft. geared plain turning.

1 No. 2 Am. Tool & Mach. Co. Lathe.
SPEED LATHES.
212 in. x 5 ft. B. G. Speed.
111 in. x 4 ft. " "
122 in. x 9 ft. " "

PLANERS.
124 in. x 24 in. x 4 ft. W. & L.
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140 lb. Bench Drop.

Large stock new machines. Prices on application.

Two 20-ton Hand Traveling Cranes, 58 ft. 10 in. span.

Send us lists of machines you have for sale, or exchange.

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Mill and Contractors' Machinery.

1 25 ton Morgan Square Shaft 50 ft. span traveling crane.
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1 30 x 36 in. Vertical Corliss Rolling Mill Engine with 20 ft. fly wheel.
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1 Centrifugal Pump.
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A full line of New Engines, Hoisting Engines, Shears, Grinding Pans, Stone Crushers and Contractors' Machinery.

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IMMEDIATE DELIVERY.

12 Plain Vertical Engines, 3 to 50 H. P.
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Direct Connected Engines, 3 to 300 H. P.
Simplicity, strength and highest efficiency.
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Full line Machine Tools and Wood Working Machinery. Write us for Catalogue No. 100.

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HYDRAULIC EMBOSSEING PRESS with 3 Piston Hydraulic Pump FOR SALE.

Vertical Press, 14 1/2 in. sq. inside of four corner steel rods which are 2 1/2 in. diam. Ram 9 in. diam., base of Gun Metal. Horizontal Pump, Pistons 1/2 in. diam., 3/4 in. stroke. Condition first-class, price very low. Full particulars of

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WHO WANTS THESE?

1 60 in. Hydraulic Car Wheel Press.
1 Sellers Axle Lathe. 1 Head.
1 Sellers 25 in. Lathe. Triple geared
1 Bement 32 in. x 15 ft. Lathe.
1 20 in. x 10 ft. Lathe. Flat Shears.
1 15 in. x 8 ft. Lathe. Screw Cutting.
1 34 in. x 16 ft.

1 52 in. x 52 in. x 20 ft. Betts Planer.
1 16 in. x 24 in. Crank Planer.

1 Bement Pulley Lathe.
1 56 in. x 8 ft. Pond Boring Mill.
1 48 in. Bement Upright Bor. Mill.
1 Bement Heavy Bar Shear.
1 Double Punch or Shear.

1 2 in. Schlencker Bolt Cutter.
1 2 in. Sellers

1 1 1/2 in. Gould " "
1 20 tons Yale & Towne Crane.
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1 2000 lbs. Sellers Steam Hammer.
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10 Steam Pumps, assorted sizes.
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1 14 in. x 48 in. Corliss Engine.
Lot Vertical and Horizontal Boilers.

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Two New Return Tubular Boilers, 125 H. P. each, built by Wetherill & Co.

500 ft. 12 inch Cast Iron Bell Pipe.

Several large Iron Tanks, round and square.

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Largest stock in America. Will be sold at bargains. These heaters are mostly taken in exchange for our improved Berryman (Kelley's Patent), "A Little Giant," vastly superior to all other feed water heaters, both as to results and durability.

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60 and 80 lb. Bradley Hammers
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110 in. Box Radial Drill.
80 in. " " very heavy.
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36 in. x 14 ft. Pond Planer
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3/4 in. to 2 in. Jarecki Pipe Machine.
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At a very great bargain, all the paper making machinery of the Walkill Paper Co.

A great chance.

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AT A BARGAIN.

1 Second hand Corliss Engine, 14 in. x 42 in.

1 Blake Stone Crusher, 15 x 9 with screen.

1 Dean Duplex Steam Pump, 5 x 3 1/2 x 5.

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One 18 in. x 42 in. Watts Campbell and 22 in. x 42 in. Wright Corliss Engines. High Speed Automatic, Simple, Compound, Condensing and Slide Valve Engines; also Blowing Engines, Boilers, Heaters, Pumps, Vacuum Pans, Ice Machines, Electric Motors, Generators, Railway Supplies, Metal Working and General Machinery.

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TWO 350 H.-P. UNITS.
ONE 150 H.-P. UNITS.

Complete with McClave Shaking Grates, Breechings, full set of fixtures and trimmings.

May be inspected at West Side Power House, Rockford Edison Company, Rockford, Illinois.

One 66 x 16 Tubular Boiler, 64 1/2 in. tubes, brand new breeching and stack 32 in. x 60 ft. Allowed 100 lbs. pressure.

Four 60 x 16 Tubular Boilers, 44 1/2 in. tubes; 100 pounds pressure.

Two 44 x 16 Boilers, thirty 4 in. flues, new fronts, all fixtures and trimmings. Allowed 100 pounds pressure.

One 1200 H.-P. Berryman Feed Water Heater. Used two months.

Built 1898.

WETHERILL CORLISS.

One right hand Wetherill Corliss Engine, cylinder 28 x 60; flywheel 20 feet diameter, weight 30 tons; shaft 15 in. x 12 ft. 6 in.; rope drive pulley 18 ft. diameter and grooved for 15 2-inch ropes; driven wheel 78 in. diameter grooved for 13 2-inch ropes; two iron idlers with boxes complete. With or without Independent Condenser 10x14x16.

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One 18 x 48 Wheelock Corliss Engine, complete, \$1,000.
One 20 x 42 Wright Automatic Engine, complete, \$1,200.
Eight 60 x 16 Horizontal Steel Tubular Boilers, complete, a bargain.
12 x 36 Lane & Bodley refitted Corliss Engine at \$750.
Three 11 x 18 celebrated Straight Line Automatic Engines, complete, at a bargain.

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One new No. 2 Putnam Back-Geared Universal Miller; weight 2,900 lbs. This machine is of the latest pattern and will be sold low for cash.

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New and Second-Hand MACHINERY In Stock for Immediate Shipment.

68 x 28 Ffield trip. grd. Lathe, new.
44 x 26 ditto, new.
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Small Lathes, 9 to 20 in. swing, different lengths of beds.
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42 x 36 x 12 Cincinnati Planer, 2 hds., new.
36 x 30 x 8 Cincinnati ditto, new.
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P & W 4 spindle double hd. Milling Mach., good as new.
No. 1 and No. 2 Bickford Radial Drills, practically new.
Also large stock of Shapers, Screw Machines, Milling Machines and other Tools. Write us your needs.

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For Immediate Delivery.

- 1 50 in. x 12 ft. Woodbury Boiler, 58 3-in. tubes, no dome, half arch front and fixtures except stack, good order.
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- All of the above boilers and engines have been thoroughly overhauled and put in first-class running order. For further information write.

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BARCAINS.

One 16 in. x 36 in. Wetherill Corliss Engine, practically new.
Large stock of Corliss, Automatic and Plain Slide Valve Engines.
Horizontal and Vertical Boilers, all sizes and descriptions.
Let us know your needs.

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No. 6 " " " "

All in good order. will be sold at a bargain. Will sell separately if desired.

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Nearly new 14 x 20 right hand "Atlas" engine in first-class condition. Used about two years. For particulars address

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 - 1 Newton Facing and Milling Lathe.
 - 1 30 inch x 16 foot Triple geared Sellers Lathe.
 - 1 84 inch x 28 foot Triple geared Bement-Miles Lathe.
- Write us your wants.

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Engine Lathes, 10 in. to 32 in. swing.
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Drill Presses, 10 in. to 28 in.
Milling Machines, Hand and Power.
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Feed and Power Presses, a variety of sizes.
Drop Hammers with and without automatic lifts.
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Send for catalogue of Presses.

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We have fifteen smaller and medium sized Single, Double and Four Drum Engines in stock. Steam and Centrifugal Pumps? Twenty-four various sizes and makes.

Lidgerwood Cableway, 1,000 ft. span.
Boiler and Three Drum Engine.
¾ yard Little Giant Steam Shovel.
27 ¼ yard Western Dump Cars.
¾ yard four-part Clam Shell.
125, 80, 70, 60, 55, 50, 40, 35, 30, 25 and smaller Portable, Vertical and Horizontal Boilers.
225 pound Steam Hammer.
300 Light Dynamo and Engine.
14 x 42 Cooper Corliss Engine.
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Plain and Friction Heads.

- 5 14 in. Plain, 1 5-16 hollow spindle.
 - 1 14 in. friction geared, 1½ hollow spindle.
 - 2 16 in. " " 1 5-16 hollow spindle.
 - 3 16 in. " " 1¾ " "
- Pratt & Whitney make. Condition A1.

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Special Bargains. Second-Hand Tools.

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- 1 14 x 4 ft. 6 in. Putnam.
- 1 14 x 5 Putnam.
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- 1 26 x 12 Lathe & Morse.
- 1 30 x 16 Ffield.
- 1 32 x 14 Pond.
- 1 B'ment Single Axle Lathe

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- 1 18½ x 14½ x 48 Ames Screw
- 1 24 x 24 x 6 Putnam.
- 1 26 x 26 x 6 N. Y. S. Eng. Co.
- 1 40 x 60 x 20 Fitchburg.
- 1 14 ft. 6 in. Sellers Plate Planer.

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- 1 10 in. Bench, York.
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- 1 39 in. New Haven.
- 1 Bement & D. Upright.

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Steel and Iron Works

Valuable as adjuncts to other works. Comprising ONE COMPLETE, WELL-DESIGNED AND WELL-EQUIPPED BESSEMER STEEL PLANT. Main building, brick, iron roof; boiler house and gas house, iron buildings. Containing 2 converters, 5 tons each (room provided for third converter). Cupolas, hoists, moulds, cranes and all tools, also for blooming and billet mill, and number of duplicate parts of machinery. Boilers, air cylinders (all mostly new) to full capacity of plant. Storehouses, separate office building, and new Fairbanks self-registering track scale.

ONE ROLLING MILL equipped to roll either iron or steel plates, skelp train, furnace capacity for 80 tons. Sheared skelp, double turn; angles, squares, Tee rails, proper boilers, engine capacity, shears, saws and all appliances complete.

ONE BLAST FURNACE, 60 ft. stack, capacity 70 tons per day. New bell and hopper, 2 blowing engines, 22,000 cu. ft. per minute capacity. New pumps and boilers recently added. All tools complete.

ONE DYNAMO AND ENGINE of capacity to light entire works and yard.

Brick office with well equipped laboratory for blast furnace and Bessemer work.

ONE OPEN HEARTH, 10 ton Siemens-Martin furnace, with 6 Siemens producers, 2 hoppers each, cranes, moulds, and tools.

One street railway chair factory, well equipped.

ONE ROLL SHOP, with engine, 2 lathes, travelling crane, and complete set of tools.

Trucks, trestles, storehouses and auxiliary buildings located on two railroad systems.

We invite bids for entire works or for separate plants.

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No. 1, capacity 300 tons daily, now running, making over \$5 per ton profit. Can be turned over promptly. Will pay half the cost this year.
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Ready for operation August 1st.

TWO HUNDRED COKE OVENS AND
Five Thousand Acres of Coal Lands in West Virginia.**FIFTY COKE OVENS AND COAL**
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Capacity 25,000 tons per annum. Now shipping East and West. Modern electric equipment. Coal is like Pocahontas smokeless used in the United States Navy. Being exported.

FIFTY THOUSAND ACRES OF KENTUCKY COAL AND TIMBER LAND.
At a low price.**WELL-KNOWN IRON PROPERTY IN**
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With well-developed ore mines and millions of tons of ore in sight and has also a large number of farms on the Cumberland and Tennessee Rivers. This property contains 40,000 acres and is a principality in itself.

MANUFACTURING PROPERTY IN
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In the 3d, 4th, 5th, 6th and 7th pools of the Monongahela River.**SOMERSET COUNTY COAL LANDS.**
In tracts of five, ten, twelve and seventeen thousand acres each, are cheap and are being sold rapidly to Eastern capitalists.**MANUFACTURING SITE AND COAL**
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For 3/4 in. and 1/2 in. plate.

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CINCINNATI, O.

STEAM TRAP, sole agency wanted for Great Britain. Must be automatic and non-freezing. Address

B. & C., Box 888, care of Willings,
121 Strand, London, England.

- No. A 34 6 boilers or rattlers, 4 ft. long, 24 in. diameter.
- No. A 35 2 36 in. Turbine water wheels.
- No. A 36 1 Clayton, 4 1/2 x 6, air compressor.
- No. A 202 1 elevator double hoisting engine and drum, cyl. 8 x 10.
- No. A 205 2 No. 3 Rice & Whitacre heaters.
- No. A 208 1 portable fire box boiler and engine combined, cyl. 6 x 12; boiler, 12 ft. long; 3 ft. diam.
- No. A 209 1 portable fire box boiler and engine with hoisting drum, all complete; cyl. 7 x 12; boiler, 8 ft. long by 3 ft. 6 in.
- No. A 211 1 Payne hot water heater, 600 ft. radiation.
- No. A 212 1 portable fire box boiler and engine combined; cyl. 5 x 12; boiler, 10 ft. long, 28 in. diam.
- No. A 216 1 single drum hoisting engine and boiler combined; cyl. 7 x 10; boiler, 6 ft. high, 3 ft. diam.
- No. A 227 3 hand power pipe threading machines, 1 to 2 in.
- No. A 292 1 portable engine and boiler; cyl. 9 1/2 x 14; boiler, 72 in. long.
- No. A 294 1 Davey safety engine and boiler combined; cyl. 8 x 9.
- No. A 327 1 hoisting rig, consisting of two separate engines and two hoisting drums; boiler, 36 in. diam. by 6 ft.; cyl. 5 x 12.
- No. A 344 1 pulley key seater, diameter any size.
- No. A 347 1 swinging crane, 9 ton capacity, 14 ft. high.
- No. A 349 1 single drum double engine hoisting rig; cyl. 6 x 8.
- No. A 353 2 Backus water motors, 36 in. diam.
- No. A 354 6 Sturtevant noiseless blowers, No. 5.
- No. A 358 Duplex air compressor, Clayton, 9 x 9.
- No. A 362 upright power drill press, 20 in. swing.
- No. A 368 1 double emery stand, 36 in. long.
- No. A 370 1 upright Yankee drill press, 20 in. swing.
- No. A 387 1 speed lathe, 5 ft. bed.
- No. A 392 10 turret lathes, assorted sizes.
- No. A 393 1 double spindle brass shaper.
- No. A 394 1 friction clutch pulley, 18 in. diam., 14 in. face.
- No. A 418 1 Crane 14 in. steam gate valve.
- No. A 421 1 belt tightener, 2 ft. 6 in. long.
- No. A 426 1 Shepard screw cutting engine lathe, 18 in. swing, 8 ft. bed.
- No. A 429 1 passenger elevator car, used at the Omaha Exposition.
- No. A 430 1 steel rotary car; hopper, 2 ft. 6 in. by 5 ft.
- No. A 432 2 "A" shaped derricks, 40 ft. high, 10 ft. wide at bottom.
- No. A 447 4 Barragwanath feed water heaters, assorted sizes.
- No. A 220 1 electric motor and elevator. Motor is 15 H.-P., made by Keystone Electric Company; 60 amp., No. 344. Cable drum, 22 in. face, 30 in. diam.; 33 grooves, 1 in.

BOILERS.

We carry a complete stock of all size boilers up to 600 H.-P. We purchased ARMOUR & CO.'S entire boiler outfit. They are all horizontal tubular, extra heavy, and guaranteed. There are 72 in. all, 48, 60 x 18; 12, 60 x 16, and 12, 54 x 16.

STEAM PUMPS.

We have the largest stock of steam pumps to be found anywhere. Write us for complete list, or tell us what you want, and we will quote prices that will secure your business.

PIPE.

We handle more pipe than any firm in the country. Ask for our prices on anything in the line.

BRASS VALVES and FITTINGS.

We carry a complete stock. Have just purchased at sale all kinds of radiators, angle, check, globe and other valves.

RADIATION.

What do you need? Write us for prices.

WANTED.

To purchase, within the next two or three weeks, a second-hand portable air riveter capable of driving a 3/4-in. rivet; a fairly light riveter which could be operated from a yard crane would be most suitable. Address communications to
POST OFFICE BOX 513, Troy, N. Y.

FOR SALE.

One 16 ft. x 60 in. horizontal boiler, 82 16 ft. x 3 in. tubes, dome 32 x 36 in., \$350. One 14 ft. x 48 in. horizontal boiler, 52 14 ft. x 3 in. tubes, dome 26 x 28 inches, \$225. Both boilers in first-class condition, 90 pounds pressure, all fixtures excepting stack.

J. E. HURLEY,
1219 Ohio Ave., Washington, D. C.

WANTED.

Second hand up-setting machine. Must be in good condition. Give particulars. Address
"UP-SETTING," care The Iron Age, New York.

FOR IMMEDIATE DELIVERY. Angles, Beams, Channels, Plates, Tees, Zees, Bars.

5000 tons in stock. Moderate prices. Send for stock sheet and quotations.

STRUCTURAL DEPARTMENT, ILLINOIS STEEL CO.,

Designers, Manufacturers and Erectors of
Structural Iron Work, Dealers in Structural Materials.

50 Wabansia Ave., CHICAGO.

BARGAINS.

We have the following new and second-hand Tools which we desire to dispose of, at extremely low prices:

- 1 25 in. Barnes Drill Press.
- 2 2 in. Cleveland Automatic Screw Machines, second-hand.
- 1 8 in. Boynton & Plummer Shaper.
- 1 10 in. " "
- 1 No. 1 Diamond Wet Tool Grinder.
- 1 No. 3 " "
- 1 No. 4 Greenard Arbor Press.
- 1 14 x 5 American Brass Lathe, set over tail stock, second-hand.
- 4 14 x 5 Lodge & Davis Brass Lathes, set over tail stock, second-hand.
- 1 13 x 5 Speed Lathe, second-hand.
- 2 11 x 4 Wells Bros. Speed Lathes.
- 1 11 x 4 Wright Speed Lathe.
- 1 No. 5 Cross & Spiers Power Press, second-hand.
- 1 Nickle Joint Foot Press, second-hand.
- 1 American Oil Separator, second-hand.
- 1 Rogers Saw Gummer, second-hand.
- 1 No. 5 Diamond Grinder, on column, second-hand.
- 1 No. 3 Diamond Polishing Machine, on column, second-hand.
- 2 No. 4 Diamond Polishing Machines, on column, second-hand.
- 1 Wells Bros. Cutter and Reamer Grinder.
- 1 Garvin Bench Cutter and Reamer Grinder, second-hand.
- 3 Reid Tapping Heads.
- 1 3 in. Bogard Mandrel Block.
- 1 20 in. Wheel and Lever Prentice Drill, power feed, automatic stop.
- 1 Waltham Wet Tool Grinder, with counter.

THE FAIRBANKS CO.,
210-212 Main Street, Buffalo, N. Y.

FOR SALE.

Second Hand Machine Tools, Etc.

- Two ten stamp belt driven Atmospheric Stamps.
- One 30 in. Boring and Turning Pulley Lathe.
- Defiance Balancing Machine.
- One Shaft Straightening Machine, 28 ft. bed.
- One double end Shaft Centering Machine.
- One Garvin No. 2 Hand Milling Machine.
- One (each) No. 3, No. 2 and No. 4 Dallett Portable Drill Presses.
- 25 to 200 H.P. Slide Valve Engines.
- One New Compound Duplex Direct Acting Steam Pump, a million capacity.
- Three Logging Locomotives.
- Two 20 ton 41 ft. span Morgan Cranes with 480 ft. of 3 1/2 in. square shaft and hangers.

THE FILER & STOWELL CO.,
Milwaukee, Wis.

SPECIAL BARGAINS. In Both New and Second Hand Machine Tools.

Special Tools and Machinery Designed and Built to Order.

Write us your wants.

THE J. E. COSTILO MACHINE WORKS,
Hudson Ave. and Concord Street,
BROOKLYN, N. Y.

WANTED.

One pair Shears, new and second hand—capable of cutting any weight of steel Tee Rails. Address "SHEARS," care The Iron Age, New York.

FOR SALE.

- 4,000 tons 60 lb. steel relaying rails, with angle bars.
- 2,000 tons McKenna re-rolled steel rails, 55-56 lb. and lighter sections.
- 400 tons 56 lb. steel relaying rails with splices.
- One mile 40 lb. steel relaying rails with splices.

ISAAC JOSEPH IRON CO.,
Swift Bldg., CINCINNATI, OHIO.
CHICAGO, ILL. SAVANNAH, GA.

STILL PURCHASING IRON AND STEEL SCRAP.

Considering the slump in the market we are always ready to buy for cash.
Relaying Rails always on hand.

M. SAMUEL & SONS,
Kent Ave. and North 2d St., Brooklyn.
Washington and Bethune Sts., New York.

FOR SALE.

- 2 21 in. Cylinder Cuyahoga Helve Hammers.
- 2 25 in. Cylinder Cuyahoga Helve Hammers.
- 1 3000 lb. Bement Double Leg Steam Hammer.
- 2 3000 lb. Morgan Double Leg Steam Hammers.

W. J. CARLIN COMPANY,
610-611 Lewis Bldg., Pittsburg, Pa.
NEW YORK OFFICE:
514-515 Park Row Bldg., New York, N. Y.

FOR SALE.

- 1 No. 1 Brown & Sharpe Universal Milling Machine.
- 1 Semi-Universal Milling Machine, Worcester Machine Co.
- 1 24 x 24 x 6 Gray Planer, new.
- 1 26 x 26 x 8 Planer.
- 1 18 x 18 x 5 Planer, with chuck.
- 1 16 in. D. T. quick stroke Shaper, Gould & Eberhardt.
- 1 12 in. Shaper, heavy machine, Michels.
- 1 36 in. heavy Bk. Gd. Drill Press, Massinet Mfg. Co.
- 1 20 in. Back Geared Drill Press and Chuck, Davis.
- 1 13 in. Sensitive Drill and Chuck, W. & R.
- 2 No. 2 Garvin Screw Machines.
- 1 Gray Screw Machine.
- 1 13 in. x 6 ft. bed, No. 6 Barnes Engine Lathe and Counter Shaft.
- 1 24 in. x 16 ft. Engine Lathe.
- 1 24 in. x 12 ft. " "
- 2 24 in. x 10 ft. " "
- 2 20 x 8 Engine Lathe, chain feed, \$30.00.
- 1 18 x 8 " " Michels.
- 1 16 x 6 " " Blaisdell.
- 1 15 x 6 " " Star Tool Co.
- 1 14 x 6 " " Pratt & Whitney.
- 1 Bench Lathe, draw-in Chucks, compound rest.
- 1 Graves Hydraulic Elevator and Car, complete, capacity 3,000 lbs.
- 1 2 x 3 Gould Triplex Power Pump.
- 1 No. 0 Knowles Single Acting Steam Pump.

MACHINISTS' SUPPLY CO.,
Rochester, N. Y.

BEAMS, CHANNELS, ANGLES, PLATES.

- Eye Beams, from 4 ins. (7 1/2 lbs.), to 20 ins. (65 lbs.)
- Channels, from 4 ins. (5 1/2 lbs.), to 15 ins. (33 lbs.)
- Angles, from 1 1/2 ins. x 1 1/2 ins. x 3-16 in. to 6 ins. x 6 ins. x 1/2 in.
- Angles, from 2 1/2 ins. x 2 ins. x 3-16 in. to 6 ins. x 4 ins. x 1/2 in.
- Zee Bars, 3 ins., 4 ins. and 5 ins.
- Plates, 1 1/2 ins. and over.
- All material in 50-ft. lengths, or cut to specified lengths if desired. Send for detail stock list.
- All material in stock, and will be shipped immediately on receipt of order.
- Quotations subject to prior sale.

THE FOREST CITY STEEL & IRON CO.,
Cleveland, O.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.
C. Botjer, 405 Newark St., Hoboken, N. J.

Scrap Iron, Steel and Metals. New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have Scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by
M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.
Telephone Call, 897 18th St.

JOHN LEONARD. MICHAEL BLAKE.
JOHN LEONARD & CO.
IRON AND STEEL SCRAP.
IRON AND STEEL RAILS, PIG IRON, ETC.,
220 Broadway.

ST. PAUL BUILDING, NEW YORK.
TELEPHONE, 975 CORTLANDT.
Correspondence Solicited.

The Morton B. Smith Co.,

243 FRONT ST., NEW YORK.
OLD METALS
of every description purchased for cash, also
SCRAP IRON and STEEL
In carload lots.
Correspondence solicited.

Scrap Iron and Old Metals.

EDW. O. MILES & CO.,
278 to 298 Marietta St., Atlanta, Ga.
CORRESPONDENCE SOLICITED FROM
BUYERS AND SELLERS.

FOR SALE RELAYING RAILS, Etc.

- 200 tons 40 lb. Steel, with Splices.
- 150 tons 35 lb. Steel, with Splices.
- 100 BOX CARS, 50,000 lbs. capacity; equipped M. C. B. couplers, Air-brakes.

MAY & SPALDING,
32 Broadway, New York, and Atlanta, Ga.

FOR SALE. Relaying Rails.

- 35 tons of 35 lb. steel, with splices.
- 80 tons of 45 lb. steel, with splices.
- 150 tons of 56 lb. steel, with splices.
- 86 tons of 63 lb. steel.

Tidewater delivery.
THE STEEL RAIL SUPPLY CO.,
100 Broadway, New York City.

RAILS.

New Light Rails.
Relaying Rails.
Rails cut to order.

Donaldson & Newton, 421 Chestnut St.,
Philadelphia, Pa.

FOR SALE.

A complete outfit for manufacturing handles, consisting of engine, boiler, saw mill, Gleason, Egan & Trevor lathes, Gleason sanders, shafting, hangers, pulleys, belting, etc.

R. S. ARMSTRONG & BRO.,
Atlanta, Ga.

SCRAP IRON.

We reduce to merchantable size large pieces of iron and steel scrap. Will buy scrap of this kind. Correspondence solicited.

BIRDSBORO IRON & STEEL
BREAKING CO., Ltd.,
Birdsboro, Pa.

Water Pipe FOR SALE.

About 15,000 feet 20 in. Cast Iron Water Pipe made by R. D. Wood & Co., 170 lbs to foot, in 12 ft. lengths, in first-class condition for re-use.

Will be sold in lots to suit.

FRANK SAMUEL,
Harrison Bldg., Philadelphia, Pa.

BERKSHIRE IRON YARD,
M. H. ROGER 5, Owner.

Scrap Iron, Metals, Etc.

221-223-225 Housatonic Ave.,
BRIDGEPORT, CONN.

TELEPHONE.

WANTED.

SCRAP STEEL.

Give description and lowest spot cash price delivered Phila., Pa.

F. GREINER, 406 Drexel Building,
PHILADELPHIA, PA.

Wagon Tires,

STEEL OR IRON,
RD. EDGE OR SQUARE.

Angles Up To Four Inch.
LOGAN IRON & STEEL CO.,
BURNHAM, PA.
Buyers of Scrap for Cash.

FOR SALE.

Complete Factory Iron Works and Patent Coal Chute Manufactory at reasonable price. Retiring from business.

C. J. KOLLER,
193 97 Sussex Ave., Newark, N. J.

TELEPHONES 2440, 2441 AND 2442 BROAD.
B. NICOLL & COMPANY,
59 AND 61 WALL STREET, NEW YORK.
WIRE RODS,
BILLETS.
IRON ORE AND MILL CINDER.
FOUNDRY, FORGE, BESSEMER and BASIC PIG IRON.
Steel and Iron Scrap for Open-Hearth Furnaces Bought and Sold.
Furnace Agents, Exporters and Importers.

Blooming Mill Engines For Sale.

A pair of Reversing Engines, 28 x 48, with countershaft and extra heavy gear wheels in Steel, all set in massive box bed plates; built by Mackintosh, Hemphill & Company, and used about four years; bloomed six hundred tons of four inch billets per day from 16 in. x 18 in. ingots. Well adapted for an open hearth plant; are in good condition. Apply to

OLIVER & SNYDER STEEL COMPANY,
Pittsburgh, Pa.

ENGINES FOR SALE.

1. An Upright Slide Valve Engine, 20 x 20, complete with 12 foot by 20 inch balance band wheel and Judson governor. This engine also has a 16 x 20 cylinder with steam chest.
2. A Corliss Upright Engine, 30 x 48, with 30 feet sectional fly wheel.

Also, One 4 and two 6 in. Judson governors, complete and in excellent order.

PENN IRON CO., Lancaster, Pa.

Hardware Stock For Sale

In the best town in Northern Ohio. Other business interests reason for selling. Address

"HARDWARE STOCK,"
care The Iron Age, New York

FOR SALE.

One Hundred Open Top Square Iron Tanks. Mounted on wheels. Capacity of each, 22 cubic feet, or 166 gallons. For blue prints and prices send to

M. P. COLEMAN,
77 Haverhill St., Boston.

For Sale Cheap.

Not in our late fire. New Gang Punch. Eight foot Bement Hydraulic Riveter, little used. Eight foot Bending Rolls. Boiler and Stack Rivets. Automatic Throttling and Link Engines. Condensers, Boilers, Machine Drills.

PAYNE ENGINEERING CO.,
120 Liberty St., N. Y. City.

Factory Site for Sale.

At Carteret, N. J., 13 Miles from City Hall, New York.

Consisting of 25 Acres, 675 ft. front on tide water ample for ocean steamers; railroad on property and within 1½ miles of Penn., Lehigh, Philadelphia & Reading and Baltimore and Ohio Railroads; unlimited supply of purest water for boiler and drinking purposes, under 85 lbs. pressure, with 12 inch main on property.

EDWARD S. SAVAGE,
31 Nassau St., N. Y. City.

ENGINES FOR SALE.

- 2 34 x 60 Horizontal Corliss Engines.
- 1 24 x 56 Horizontal Corliss Engine.
- 1 24 x 30 Piston Valve Engine.

W. J. CARLIN COMPANY,
610 and 611 Lewis Bldg., Pittsburgh, Pa.
NEW YORK OFFICE:
514-515 Park Row Bldg., New York, N. Y.

FOR SALE.

One 10 inch Bar Mill. One 18 inch Bar Mill.
W. J. CARLIN COMPANY,
610-611 Lewis Bldg., Pittsburgh, Pa.
NEW YORK OFFICE:
514-515 Park Row Bldg., New York, N. Y.

WANTED.

10 Wire Nail Machines for the purpose of cutting 16 to 20 wire, making brads, etc. Address
"M. M." care Pedro Treviro, Monterey, Mexico.

FOR SALE.

7 H.-P. Otto Gas Engine. Perfect condition. Good as new. Cheap.
H. E. PERRY, 3923 Union Ave., Chicago.

Special Screw Machine Work Wanted.

We are fully equipped with latest appliances for handling this work, especially that required for Bicycle or Automobile manufacture, and are prepared to quote low prices for those interested. Estimates for this class of work gladly furnished on application. Correspondence solicited.

**J. STEVENS ARMS
AND TOOL CO.,**

P. O. Box 46,

CHICOPEE FALLS, MASS.

I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Phila., Pa.

FOR SALE. Second Hand Machine Tools, &c.

1-26 in. x 16 ft. New Haven Engine Lathe.
2-15 in. x 5 ft. Monitor Lathes, for brass work.
1-50 in. Pulley Lathe.
1-14 in. x 5 ft. Speed Lathes with counter shaft.
1-20 in. x 13 ft. Eng. S. C. Lathe with counter shaft.
Ames' make.
1-22 in. Blaisdell Drill.
1-24 in. Thorn & DeHaven Drill.
1-14 in. x 5 ft. Fox Lathe with Forming Tool, att.
1-Sprue Cutter, deep throat, 13 in., heavy.
4-Brass Furnaces, 24 in. x 36 in. (used 3 months).
1-Pattern Shop Wood Lathe, 14 in. x 7 ft. 6 in.
1-10 H.P. Gas Engine.

Apply to

NORTHERN ENGINEERING WORKS,
DETROIT, MICH.

BLOWING ENGINES FOR SALE. Prompt delivery and low price.

One Mackintosh and Hemphill Engine, built in 1872, steam cylinder 31 inches in diameter, blowing cylinder 72 inches in diameter and 4 ft. stroke.

One Globe Engine, made in 1873, steam cylinder 31 inches in diameter, blowing cylinder 72 inches in diameter and 4 ft. stroke.

These two engines, outside of a few ordinary repairs incident to a long blast, are in good condition. Apply to

SAMUEL MCCLURE,
General Manager Stewart Iron Co., Ltd.,
SHARON, PA.

BOILER PLANT FOR SALE. Here is the chance of your life.

The best boiler shop in the country, up to date in every respect. At present working with 50 hands; can turn out more work with 50 men than most shops with 100 men.

We are doing \$100,000 worth of business per year and making 20 per cent.

Have \$10,000.00 worth of orders on books most of the time.

Freight rate to New York City 13 cents, from the steel market 12 cents, from the tube market 5 cents.

For good reasons, this plant will be sold cheap.

Address "BOILER PLANT,"
care The Iron Age, New York

NOTICE.

Party owning factory site, land and buildings, desires some company making good paying specialty to locate on same with a view to taking an interest in the business. Address

LOCK BOX 572, New Castle, Pa.

WANTED.

100 ft. of cylinder boilers, 48 in. to 60 in. in diameter. Must be water tight. Address

"ROCK," care The Iron Age, New York.

FOR SALE.

Combination Ice and Roller Skate Dies.

Patent for Elevator Stop and Lock.

Patent for Elevator Gate and Bar.

Send for our list of patents.

P. O. BOX 2234, Boston, Mass.

FOR SALE.

\$10,000 stock of hardware. The best town in Southern Michigan. Address

"HARDWARE,"

care The Iron Age, 1205 Fisher Bldg., Chicago, Ill.

TO REPRESENT.

An Engineering Concern with headquarters in Phila. would like to represent manufacturers of Steam Engines, Boilers, Pumps and other Engineering specialties. Address

"REPRESENTATIVE,"
care The Iron Age, New York.

Spanish Translations

By Graduate of the University of Sevilla, Spain. Scientific, Electrical, Mechanical and Literary work. Correctness of work guaranteed. Moderate prices. Write for references.

J. DELGADO AGUILAR, B.A.

302-4 Washington St., Brooklyn, N. Y.

E. BISSELL & CO., WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 13 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

Trustees' Sale by Trustees of Monarch Horse Nail Co.

Will be sold at public auction at Bridgewater, Mass., in one lot on Thursday, Oct. 18th, 1900, at 10:30 o'clock A. M., on the premises, all the horseshoe nail machinery and stock on hand of the Monarch Horse Nail Co., located in the factory building of Henry Perkins, near the station of N. Y., N. H. & H. R. R. Co., in said Bridgewater Mass., consisting of the following:

1 Rolling Mill; 3 Heading Machines; 4 Woodford Pointers; 2 Iron Rattlers; 1 Wooden Rattler; 1 Wire Revolving Screen; 1 Double Wheel Power Emery Grinder; 1 Buffalo Forge; 1 Millers Falls Power Hack Saw; 1 No. 0 Sturtevant Blower; 1 No. 3 Brainard Standard Universal Milling Machine; 1 15 x 6 Goddard Engine Lathe; 1 Brainard Standard Universal Head, 9 in.; 1 Whiton Independent Chuck, 9 x 4 jaw; 2 pair Scales; 1 Desk; About 50,000 5 lb. Paper Nail Boxes; 350 Nail Hods; belt-ing, small tools, files, drills, taps and dies, milling and gear cutters, wrenches, iron and steel rolls, extra parts for machines, tool steel lathe tools and punches, lamps and oils, and all tools and machinery complete for the manufacture of 1,000 lbs. of horse nails per day, together with the Patent Rights for the United States for improved cold rolled process for making horseshoe nail blanks.

For further information inquire of the Trustees, or property can be seen on the premises.

Terms, one-half cash at time of sale, balance within one week thereafter.

Eben Perkins,
Chas. O. McIntosh, } Trustees.

FOREIGN TRADE.

Gentleman having extensive business connections in Continental Europe is now in the United States looking up all improved machinery and novelties suitable for introduction in the European market. Concerns having such machines are requested to forward particulars to the address below.

CARL KRATZ,
Of the firm of De Fries & Co. Akt. Ges.
care Knauth, Nachod, Kuhne, New York.

WANTED.

10-TON TRAVELING CRANE.

Hand power. Second hand if in good condition. State the present span. Address

MCCULLOUGH IRON CO.,
Wilmington, Del.

FOR SALE.

Sand Blast with air compressor, Ward & Nash, makers. Also Welding Machine for light work for sale cheap. "SAND BLAST,"
care The Iron Age, New York.

FOR SALE.

\$7,000.00 stock of hardware and brick building. For particulars address "M. D. E."
care The Iron Age, Chicago, Ill.

FOR SALE.

One 15 H.P. Engine.
One 30 H.P. Upright Boiler.
Both in good condition. A bargain. Can be seen in operation. Immediate delivery.
E. & B., P. O. Box 133, Station W., Brooklyn, N. Y.

ONLY \$2.00 PER 100.
Travelers' Expense Books.
Samples free upon application.
C. A. NICHOLS, Box 777, Worcester, Mass.

HISTORY OF A POOL.

A Pamphlet, 109 Pages,
Price 25c.

This book describes accurately in narrative form one of the methods of promoting and carrying on a combination or pool. It is recognized as an important contribution to the discussion of the measures manufacturers resort to for protection from the effects of excessive competition.

The Ironville Hardware Association.

A Pamphlet, 79 Pages,
Price 25c.

This book deals with the prevailing evils of unreasonable competition in the retail hardware trade.

It presents in interesting narrative form the policy and procedure of The Ironville Hardware Association, a local combination of merchants.

In the history of the methods of this organization are set forth many excellent suggestions and much "Food for Thought" for Hardwaremen.

It tells how this association was successfully established, how and why in the face of many difficulties the members were enabled to maintain fraternal relations.

How a uniform and profitable standard of prices was instituted, and finally, how the local trade was re-established on a sound business basis to the permanent benefit of all concerned.

It is a common sense business book and will be useful and suggestive to hardware dealers as illustrating prevailing conditions in the trade.

DAVID WILLIAMS COMPANY,
Publishers,
232-238 William St., New York.

Help Wanted.

Undisplayed Advertisements for Help Wanted not exceeding fifty words, including address, One Dollar each insertion. Additional words two cents each.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

A man who is acquainted with purchasers of axes and tools in Pennsylvania, also one in West Virginia and Virginia, to solicit orders for us. Address "W. M.," Lewistown, Pa.

Wanted, FOREMAN for Chicago shop employing 40 men; want bright, active and energetic young man, one who has had experience as foreman and who thoroughly understands all kinds of machine, blacksmith and elevator work (freight and passenger); state experience, age and salary expected. Address "Shop Foreman," care *The Iron Age*, New York.

WANTED, SUPERINTENDENT, of good mechanical and executive ability, for manufacturing establishment employing about 50 men; man at present employed and one who has a positive record to show of his ability to successfully handle all kinds of help, to systematize and produce results. Address, with references and full particulars, "New England Company," care *The Iron Age*, New York.

WANTED.—An experienced man to act as agent in the sale of foreign patents on an important product now manufactured upon a large scale in the United States; only a first-rate man accustomed to such business need apply; reference will be required. Address Lock Box 2005, Station A, Philadelphia, Pa.

Experienced SUPERINTENDENT for fan motor factory; must be expert mechanic and good handler of men; state experience, salary desired and give reference. Address "English Factory," care *The Iron Age*, New York.

First-class MECHANICAL DRAFTSMEN wanted by an Eastern engineering firm; state age, experience and salary. Address "Engineering Firm," care *The Iron Age*, New York.

Wanted at once, two or three DRAFTSMEN on shop details of structural and ornamental iron work. Address Boston Steel & Iron Company, Medford, Mass.

MASTER MECHANIC, acquainted with rolling mill and hammer machinery. Address "Mechanic," care *The Iron Age*, Hamilton Building, Pittsburgh, Pa.

SUPERINTENDENT for rolling mill; one acquainted with high grade steels. Address "W. S.," care *The Iron Age*, Hamilton Building, Pittsburgh, Pa.

A first-class BABBITT METAL SALESMAN to cover the Eastern States; in writing give experience and references. Address Markle Lead Works, 720 Bialto Building, St. Louis, Mo.

Experienced HARDWARE SALESMAN or CUTLERY SALESMAN to take a side line of miscellaneous cutlery, butcher, putty and kitchen knives, &c. Address "Big Cut," care *The Iron Age*, New York.

Liberal Inducements to SALESMEN to sell mechanical goods to dealers and manufacturers in New England, New Jersey, Maryland, Virginia and Delaware. Address "Liberal," care *The Iron Age*, New York.

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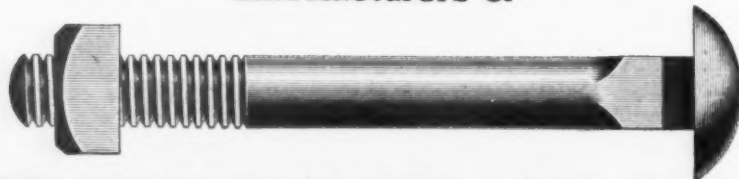
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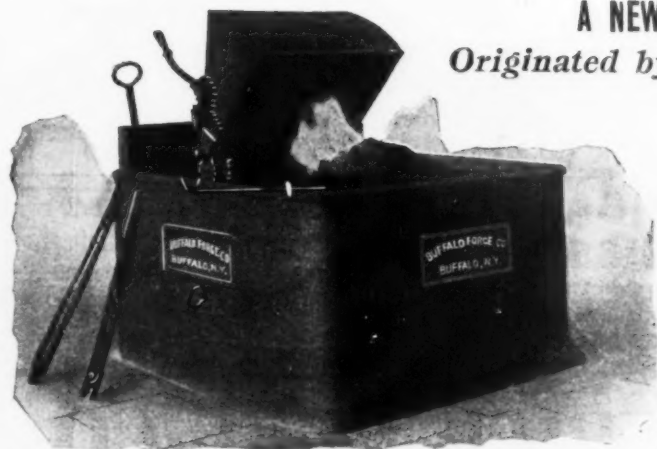
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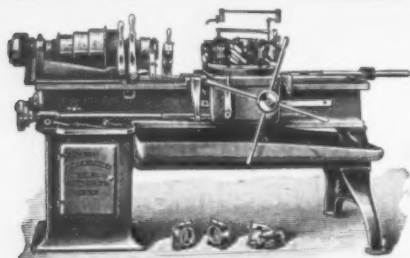


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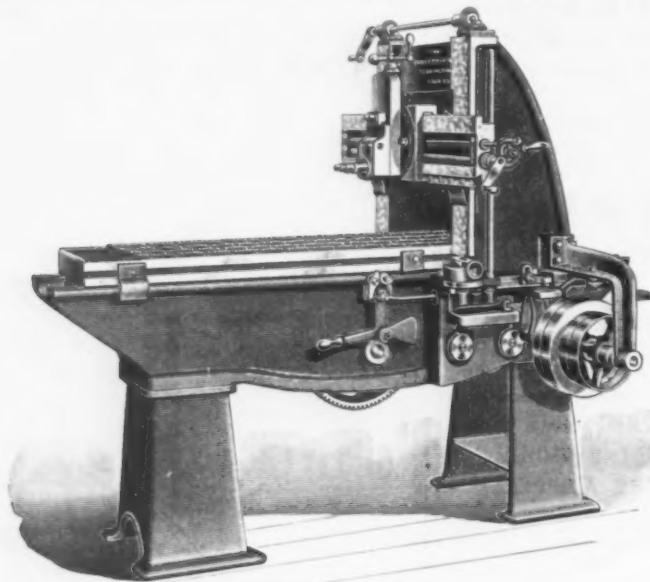
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THE IRON AGE

THURSDAY, SEPTEMBER 27, 1900

The Beaman & Smith Boring Machines.

The accompanying engravings show three different types of boring machines recently designed and built by Beaman & Smith of Providence, R. I. The boring bar, Fig. 1, is 10 inches in diameter and 10½ feet long. The traveling head is 14 inches in diameter for boring tools and is provided with an automatic star wheel feed

erations of boring and facing are performed simultaneously, thus producing the maximum amount of work in a given time. The boring mechanism is entirely separate from the facing, each having its own driving power and feed.

The facing spindles are hollow, with suitable bearings to support the boring spindles which pass through them, but can be so withdrawn as not to interfere with the

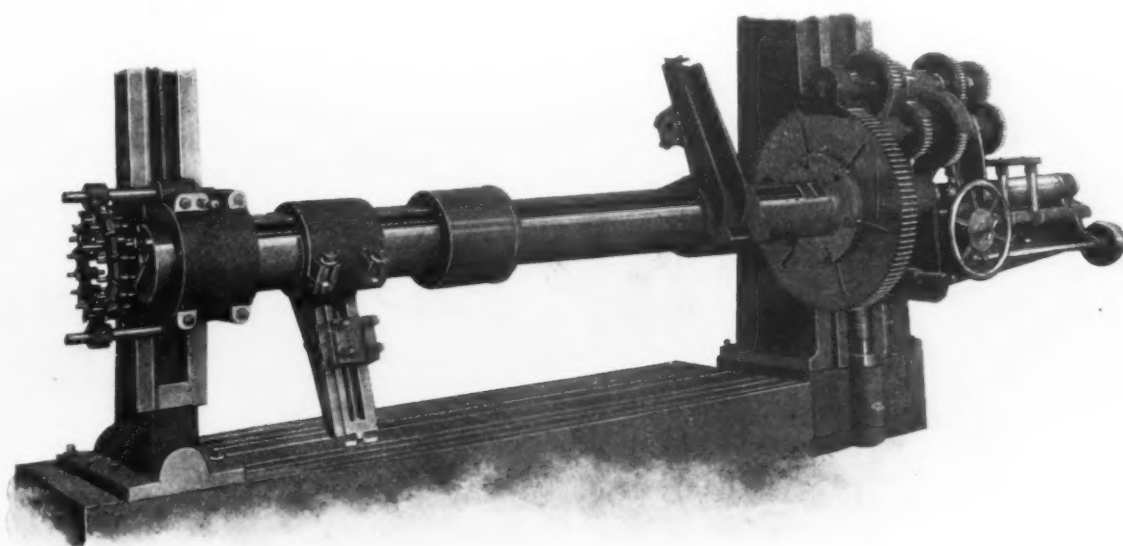


Fig. 1.—Boring Bar.

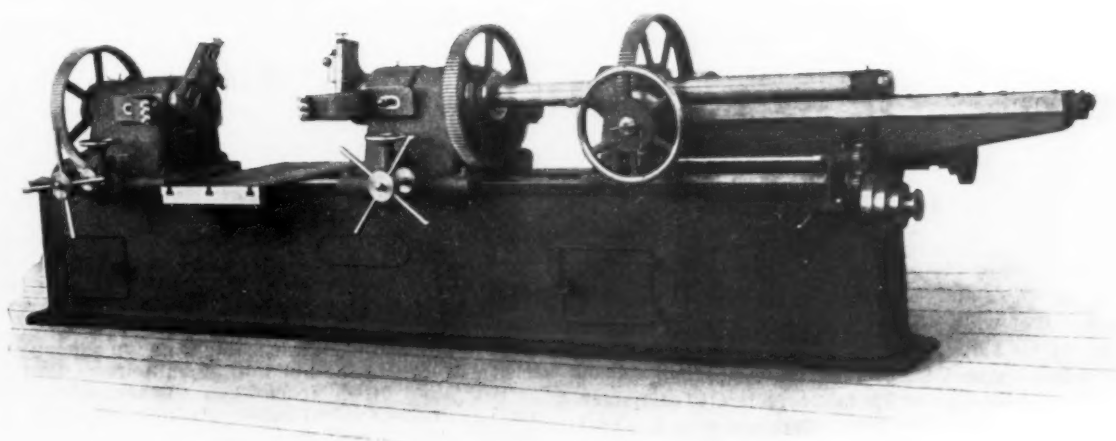


Fig. 2.—Cylinder Boring and Facing Machine

THE BEAMAN & SMITH BORING MACHINES.

having 14 changes, ranging from 1-24 inch to 14-24 inch per revolution of the bar. There are two facers also furnished with star wheel feed, and the tool slide has a cross adjustment of 2¼ inches. The machine is suitable for boring work from 16 inches to 4 feet in diameter and up to 7 feet in length, and the facers will face to 50 inches in diameter and operate on both ends of a cylinder at once. The weight of the bar and attachments is 2500 pounds.

The next engraving represents what the builders term their No. 1 cylinder boring and facing machine. The op-

placing or removal of work. The facing spindles are driven in unison. The heads have independent horizontal movement on the bed, each with quick hand movement and fine adjustment.

The general dimensions are as follows: The table work surface is 18 inches wide, 24 inches long and has three tee slots. The feeds of the facers are independent, in and out, of the boring spindle from 13 1-3 to 120 turns to 1 inch travel in either direction. The power for the boring spindle is transmitted by a 3½-inch belt on a four-section cone through gearing in the ratio of 21 to 1;

the facing spindles from a 4-inch belt on a 14-inch pulley through gearing in the ratio of 16 to 1. The spindles for facing are $7\frac{3}{4}$ inches in diameter; for boring 4 inches in diameter. They have a 50-inch movement. They are provided also with a No. 5 Morse taper hole in the end, and bars to and including 4 inches in diameter can be used. The machine will bore to 12 inches diameter, 24 inches long; face to 20 inches diameter. From top of table to center of spindles is 13 inches. The countershaft for boring has tight and loose pulleys 16 inches in diameter for a 4-inch belt, and runs 230 revolutions per minute. The countershaft for facing has tight and loose pulleys 14 inches in diameter for a 4-inch belt and runs 110 revolutions per minute. The machine weighs approximately 11,000 pounds.

The next cylinder boring and facing machine consists of a substantial platen, on which are suitable uprights to support a bar with traveling head, facers and star wheel feed mechanism. It is only suitable, however, for

Costa Rican Notes.

But few would recognize the present port of Limon, Costa Rica, who had not seen it for five years or so. The ill kept town has given way to a well laid out and relatively clean city, and the iron piers and docks now make it possible for large steamers to land their cargoes directly on shore. This is also the terminus of the railway to the capital, San José, on which line much repairing is now being done, especially about Turrialba, where the wash from the volcano has often made the road dangerous and cost the company in the aggregate some \$250,000. This is a British concern, while that which has improved the port of Limon is American, headed by the well-known contractor, Monroe C. Keith. Much of the railroad building in this republic has been done by Mr. Keith, after vanquishing obstacles under which most men would have succumbed. The Costa Rica-Pacific is now building to Port Tivines on the west coast; a number of bridges are now being put up, and it is confidently expected that the line will be in operation within a year from date. This will at least give the much desired through traffic line between the Atlan-

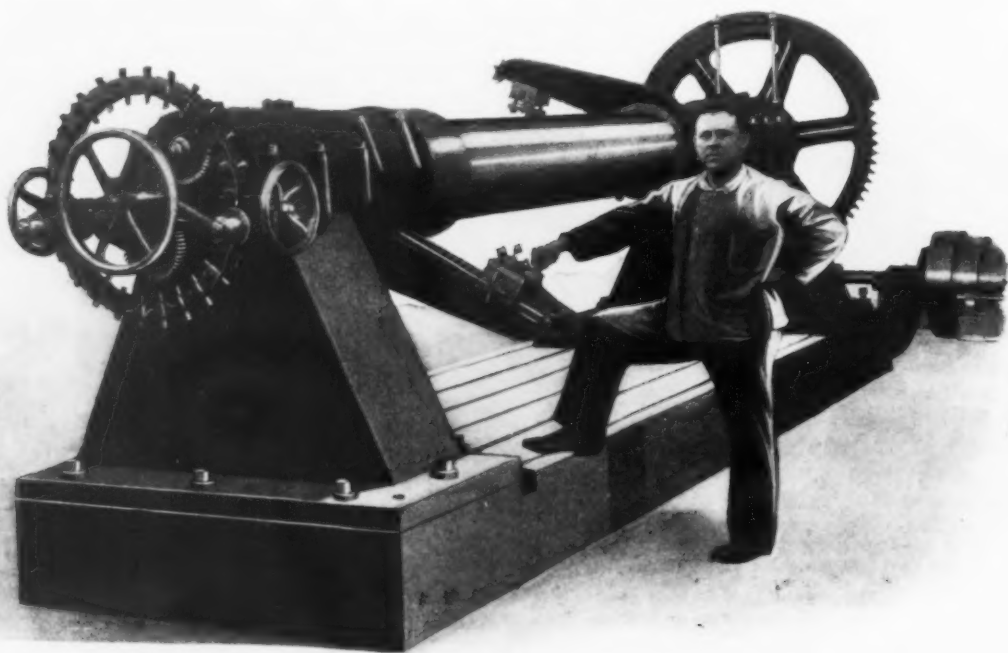


Fig. 3.—Cylinder Boring and Facing Machine.

THE BEAMAN & SMITH BORING MACHINES.

boring and facing divided cylinders, such as used for positive blowers, and those of like construction. The platen is 5 feet wide, 15 inches high, about 19 feet long and has six tee slots. The bar is 16 inches in diameter, about 18 feet 6 inches long, is driven by a 5-inch belt on a five-section cone from 13 to 24 inches in diameter, through spur gearing and Albro-Clem worm and wheel, in the ratio of 120 to 1, at the rate of 1.08 to 3.7 turns per minute. The traveling head is 200 inches in diameter, and to it tool holders as required are attached. These are provided by the user. The feed is by means of two screws through gearing to a star wheel shaft at right angles to them, pins providing an automatic feed mechanism with 24 changes in either direction at the rate of 1-24 to 1 inch per revolution of bar. Hand adjustment is provided by means of an 18-inch wheel. There are two facers, each having a 2-inch cross adjustment and five changes of automatic feed in or out, from 1-30 to 1-6 inch per revolution of the bar. The capacity is 40 inches from the center of the bar to the platen. The machine will bore and face cylinders 9 feet long by 60 inches outside diameter. The countershaft has a pair of tight and loose pulleys 20 inches in diameter for 6-inch belt, and runs 240 revolutions per minute. The weight is 38,000 pounds.

tic and Pacific. However, much work, large docks and piers will be necessary at the Pacific port to make it at all available. The present port, Punta Arenas, is low, sickly and in bad repair.

It is probable that the banana and mahogany industries will lead to the building of a line from Port Limon to San Juan River (Nicaragua Canal route). This is another of the Central American lines projected by Mr. Keith, and it would go a long way to help in the construction of the canal if it is carried out soon. Most of the land that is traversed by this railroad line (in project) is very rich and will yield enormously to the fruit growers. A great deal of the material for the canal would then come in *via* Limon and this railway.

President Iglesias has managed to establish the gold standard in Costa Rica without causing a ripple even in the body politic, and it looks very much as though the experiment may prove to be a real success in the end. All silver has been retired from circulation by law, and none is imported.

J. R. C.

At the annual meeting of the Steel Company of Scotland the following statement was made by the presiding officer: "During the past year their coal bill has increased by 37.8 per cent. The price paid for pig iron has increased by 33 per cent., for ferromanganese by 42 per cent., and for ingot molds by 35 per cent., while wages have advanced 10 per cent. On the other hand, the selling price of steel plates—the average price for two years—has not increased by more than 13 per cent."

Natural Gas.

Its Production and Consumption.

WASHINGTON, September 25, 1900.—The annual report of the United States Geological Survey on the production and consumption of natural gas, which has just been compiled by F. H. Oliphant, presents some unusually interesting features, embracing a comprehensive survey of the gas producing fields, a discussion of the evidence that the natural supply is rapidly becoming exhausted, and some statistics concerning the extent to which natural gas is utilized as fuel by the iron and steel industries. Through the courtesy of the Director of the Survey, the correspondent of *The Iron Age* is enabled to present the following abstract of the report:

The total value of the natural gas produced and marketed in the United States in 1899 was \$20,024,864, while that of 1898 was \$15,296,813, showing a gain of \$4,730,051. This gain is due in part to the slight increase in price charged consumers, and to the securing of more complete returns; but mainly to the increased amount of natural gas produced and marketed.

This has been accomplished against a declining pressure in all of the old fields, as there was little new territory developed during the year, except it be in the extreme southwestern portion of Pennsylvania and a portion of West Virginia, in which some virgin territory that has not felt the drain of nearby wells was developed. The increased delivery is due principally to the enlargement and multiplication of the pipe lines of the old companies, the application of the gas compressor on a large scale, and a more careful manipulation of the wells and lines, so as to anticipate the requirements of the consumers.

West Virginia made the largest increase of all the gas producing States. There were four large companies operating in the State during the year which conveyed the product into Pennsylvania and Ohio for consumption. They were responsible for the large increase in the natural gas output of West Virginia.

The total number of wells producing gas operated at the close of 1898 was 8453, and at the close of 1899, 9333. This is an increase of 880 wells, or over 10 per cent., of the number at the close of the preceding year. The increase in the value of gas sold during 1899 was 31 per cent.

Of the total value of gas produced in 1899, the Appalachian natural gas fields supplied 60 per cent. and the Lima, Ind., fields 37 per cent., leaving but 3 per cent. of the valuation for the production of all the other fields in the United States.

The Appalachian Field.

The conditions under which natural gas is produced in the Appalachian and Lima, Ind., gas fields are somewhat similar, although in the first named the gas is derived from a source of more or less porous sandstone, while the latter is found in the porous strata near the top of the massive Trenton limestone. The Appalachian sandstones containing the gas are found on the flanks and summits along the lines of uplifts in the strata. The gas of the Lima, Ind., field is collected along the flanks and summits of the great, gradual swells of the Cincinnati uplifts. In the Appalachian regions there are a series of waves in the structure forming high ridges, with troughs or depressions between, known geologically as anti-clinals and synclinals. These rock waves have gently curved arches and gradually sloping flanks, and they follow a generally northeast and southwest course to the west and northwest of the main Appalachian chain of mountains, out in a measure parallel with them. Beginning in the western part of New York, the parallel folds can be traced with some irregularities and modifications into Eastern Kentucky, crossing Pennsylvania and West Virginia, with outlying minor folds in Southeastern Ohio. In sections these parallel ridges are disturbed by crossed anti-clinals, and the lines themselves are offset in several localities. The denudation of these uplifts has evened up the general surface, so that they are not usually prominent in the topography of the section.

The whole series with their folds have a general southwestern dip from Western New York to a point near Parkersburg, W. Va., which averages 17 feet to the mile until West Virginia is reached, where it flattens off. From its lowest point the measures are almost even for miles, gradually rising in all directions. Near the eastern edge of this level area there is a most remarkable sudden uplift, or anti-clinal, extending almost due south from St. Mary's, W. Va., to Spencer, in Roane County, W. Va., a distance of 40 miles. On the flanks of these folds and at their crests, where the rocks are the greatest in elevation, the great reservoirs of gas are found. The main gas producing territory of the Appalachian

region begins a few miles northwest of Parkersburg, and with the exception of a few barren sections and offsets, it is almost continuous in a northeast direction as far as Western New York. That portion bearing southwest from Parkersburg, into Kentucky and Tennessee, is lacking in the regular structure of the section to the northeast, owing to the thickening of the measures below the Pittsburgh coal, which has to a large extent counteracted the folds found on the surface. In this portion of the Appalachian field, however, there are some areas which are known to contain high pressure gas in considerable quantities. There are numerous sands covered up over this great area which hold both natural gas and petroleum. It is usually the position of the well with reference to the arch which determines whether it will produce gas or petroleum. Since the gas is very much lighter than the petroleum, it is found in the higher portion of the same sand strata, while the petroleum is contained in the lower portion and salt water in and near the bottom of the trough. There are often exceptions to this, however, which are generally accounted for by local folding or thickening of the strata in the floor of the trough or on the flanks of the uplift.

There are a number of sandstone strata that in different parts of the region produce gas. In a few localities three of the sandstone strata passed through by the drill are known to have produced in quantity, but usually the big flow found is confined to a single stratum. The strata which contain gas in quantity in different locations begin with the principal member of the Mahoning or Dunkard sands, at the bottom of the barren measures of the carboniferous group, and end with the Kane sand of the middle Chemung formation. The whole section represents a distance of about 3500 feet of vertical strata, in which there are about 25 separate producing sands which vary in structure from those containing beautiful rounded pebbles from the size of a pea up to a marble, to those of a dark red, compact sandstone. The top portion of the sand is often very hard, compact silica, and the open or pebble formation is found below. The sand is usually covered with compact slate or shale.

The Cincinnati Arch.

The natural gas produced in what is known as the Lima, Ind., field comes entirely from the Trenton limestone; not that the limestone in all localities holds the gas, for it is contained only in those parts of the field where natural reservoirs have been formed in the rock. A portion of the limestone areas in Ohio and Indiana has two or more strata near the top of the formation which are more or less porous or cellular, owing to the fact that the interlinking of the crystals of dolomite leaves small spaces for the accumulation of gas. Into these porous divisions, commonly termed pay streaks, the natural gas has packed itself under enormous pressure. There is a covering of compact shale, known as the Utica shale, capping the surface of the Trenton limestone, which has sealed in the accumulated gas for untold ages.

The great Cincinnati arch, beginning in Tennessee, extends through Kentucky in a generally northern direction and crosses the Ohio River a few miles above the city of Cincinnati at an elevation on the crest of its anticlinal of 450 feet. The main crest then swings to the northwest, with steadily declining elevation and with wide, gently sloping flanks, and passes into Indiana. At Hartford City, in Blackford County, its crest is at sea level and is covered by 900 feet of superimposed stratifications and drift. Very near the center of the north and south line, forming the western boundary of Ohio, an arm starts off from the main arch, above described, pointing northeast, whose crest is subject to some undulations, until at Findlay, Ohio, it has an elevation of about 315 feet below sea level at the highest elevation and is here covered by 1100 feet of strata. At this point this arm forks, one limb pursuing a course nearly north as far as Sylva, on the Michigan border. The main arch continues its general course, reaching Lake Erie, near Oak Harbor, at an elevation of about 725 feet below sea level, and covered by 1350 feet of strata. On the northern flank of the great broad swell of the main arch in Indiana, as well as along the declining crest of the arch toward the northwest, the great natural gas producing areas are located, estimated to contain 2000 square miles. The area of gas producing territory in Ohio is estimated as covering 500 square miles; that at and near Findlay originally covered 100 square miles.

It is estimated that the average price of natural gas furnished consumers during 1899 was 18½ cents per thousand cubic feet. At a pressure of 4 ounces per square inch, this would represent the amount of 108,000,000,000 cubic feet, and would fill a vessel 1 mile square to the height of 3871 feet, if it were possible for the density to remain the same throughout. It would require the consumption of 5,400,000 tons of coal to equal the heating capacity of this amount of natural gas. There were 18,856 miles of natural gas mains in use up

to the close of 1899, of various concerns, from 2 inches up to 36 inches in diameter.

Exhaustion of the Gas Fields.

It is sad to relate that both of the great gas producing fields, large as they once were, are approaching exhaustion. The greater portion of the Ohio division of these fields, which originally had a rock pressure of 480 pounds to the square inch, has now no rock pressure whatever. A large area of the Indiana division has also yielded up over one-half of the volume of natural gas once stored in its great reservoir. The original rock pressure in Indiana was the same all over the field and registered 325 pounds to the square inch. It is now down to an average of 165 pounds to the square inch, and if 100 pounds is required to hold back the pressure of salt water, the figures show that 66 per cent. of the product has been taken out and consumed. The unjustifiable waste in all the natural gas fields has been enormous. Because of the original idea that the gas supply was inexhaustible, since one or two wells did not show any large decline in pressure during the first six months of their life, and also because it seemed to cost the owners nothing after the well was drilled, millions and millions of cubic feet of this most precious fuel were allowed to escape into the air unconsumed. Its value will only be realized after it is all exhausted.

All the fields show loss of pressure. The old field of Trenton rock gas in Northwestern Ohio is nearly exhausted. That of Indiana is undergoing a rapid decline. Many of the old fields have been practically exhausted in Pennsylvania also. Were it not for the fact that in Pennsylvania and West Virginia the gas areas are more or less separated by streaks of unproductive territory, they too would have shown the same conditions that are observed in Ohio and Indiana. To reach the various gas pools of the Appalachian fields usually involves a complete change in the location of gas mains, which is a source of continual expense to the Eastern gas companies. The great, broad and almost universal gas producing qualities of the Trenton limestone inside of definite limits have made it a matter of simply lengthening the gas mains to reach additional territory.

Following is the value of natural gas produced in the United States in 1899, by States: California, \$86,891; Colorado, \$1480; Illinois, \$2067; Indiana, \$6,680,370; Kansas, \$282,392; Kentucky, \$125,745; Missouri, \$290; New York, \$294,593; Ohio, \$1,866,271; Pennsylvania, \$8,337,210; South Dakota, \$3500; Texas, \$8000; West Virginia, \$2,335,864. Total, \$20,024,873.

Several States produce gas which is consumed in adjoining States. These supply more gas than finds a ready market in the sections readily accessible to the source of production, the pipe line being the medium through which it is conveyed to market. The gas producing States are traversed by an intricate system of pipe lines, reaching from one State to others in several instances. Thus, Pennsylvania supplies natural gas to New York, Ohio and West Virginia. Ohio does not furnish any gas to any of the bordering States, although several years previous it furnished some gas to Michigan. It receives natural gas from Pennsylvania, Indiana, West Virginia and Kentucky. Indiana furnishes natural gas to Ohio and Illinois; West Virginia furnishes natural gas to Ohio and Pennsylvania and receives it from Pennsylvania and Kentucky. Canada furnishes natural gas to Michigan, New York and Ohio. Thus it can readily be seen that the collection and distribution of our natural gas product in the several States requires a large amount of skill and labor.

During the past year there was a consolidation of a number of the companies furnishing natural gas. There was also an increase in the price at which the natural gas was marketed during 1899, as compared with the former years. It is also noticeable that 1428 individuals and companies made returns in 1899, as compared with 1169 in 1898.

During 1899 natural gas was employed as fuel in 13 iron mills, 63 steel works, 196 glass works and 3947 other establishments. In the heating of large furnaces, in the manufacture of steel, in the puddling of iron, the roasting of ores, the manufacture of glass, and in many metallurgical operations, it is without a rival. The gaseous state of fuel is one step nearer combustion, since all slate and liquid fuel must be converted to a gaseous condition before it is consumed. This accounts for the extra work accomplished with the aid of the gas fuel. It has a heating value greater by one-third than the best coal gas, doubly as effective as carbureted water gas, three and one-half times as effective as non-carbureted water gas and seven and one-half times as effective as ordinary gas.

W. L. C.

There are 14 vessels at the yards of the Cramp Engine & Shipbuilding Company at Philadelphia. Every slip, nine in all, is occupied, and five vessels are in the water.

Foreign Capital in Russian Industrial Undertakings

A special correspondent of the *Financial Chronicle*, dealing with the general subject of development in Russia, reviews as follows the part taken by foreign investors:

The stream of foreign capital, however, was directed into quite a new direction, when at the beginning of the sixties Mr. Hughes, an English engineer, set out for the South of the Empire, notably the district on the Donetz, where he was the first to embark upon the working of the almost inexhaustible riches of the soil, mainly consisting in coal and iron ore. In the beginning of his career Hughes had to contend with the typical difficulties which every Russian industry has to reckon with still nowadays, and which may be summarized as follows: The comparatively small supply of skilled labor and the little efficiency of the work people, chiefly recruited among agriculturists, who never accustom themselves properly to the life in mines and factories, and who avail themselves of the first opportunity to run away, always with the same excuse ready at hand, that the land which they possess in their capacity as members of rural communities demands their presence in order to be cultivated. Nevertheless, the works of the Hughes family, the center of which is the small town of Jusowo, named after the founder of the works, have developed not only to be the largest metallurgical undertaking throughout the Russian Empire (and that in spite of there having been founded during the last few years in the South of Russia a great number of very extensive works of a similar character), but also to rank among the largest undertakings of the kind in the whole of Europe.

By far the largest part of the foreign capital which in recent times was invested in Russian industries is of Belgian origin. Although the Belgian interests are divided among a great variety of industries, such as electric works, water works, tile kilns, glass factories, &c., and although, moreover, about 60,000,000 francs were used for the construction or acquisition of the tramway systems of some of the most important cities of the empire, such as Moscow, Warsaw, Charkow, Kiew, Kasan, Tiflis, Astrachan, &c., nevertheless by far the largest amounts of Belgian capital were directed toward the South of the Empire, where they are employed to develop the newly created metallurgical and mining industries. Besides the mighty concern of the Dniéprovienne Company, in a way the Russian branch establishment of the firm of Cockerill in Séraing, there are companies such as the Société Générale de l'Industrie Minière et Métallurgique en Russie, or the Chantiers Navals, Ateliers et Fonderies de Nicolaïeff, or the Société Belge pour Exploitation des Charbonnages du Centre du Donetz, the share capitals of which amount to no less than 25,000,000, 16,000,000 and 12,000,000 francs, respectively. Furthermore, a great number of smaller companies have been created, the capital of which varies between 500,000 and 5,000,000 francs. Until July 1, 1899, the aggregate share capital of the Belgian metallurgical companies then in existence amounted to 280,000,000 francs, while about 160,000,000 francs were invested in tramways and various other industries. These sums, however, have greatly increased since, as new Belgian companies are being founded continually and authorized to begin operations, so that Belgian interests in Russia are becoming more important every day.

A part of minor importance, but still an important part in developing the more modern Russian industries, is played by French capital. Like their Belgian neighbors, the French likewise direct most of the capital they employ in Russia toward the two industries of the South—namely, mining and metallurgy—and although there exist some French companies for the extraction of naphtha (Standard Russe, French gas and water works (Compagnie des Eaux et du Gaz de Rostoff's Don), tramways constructed and worked with French capital (Compagnie Centrale des Chemins de Fer et de Tramways), &c., most of the French money appears to have been invested in mining and metallurgical ventures, among which, for instance, the Société Métallurgique de l'Oural-Volga, the Société Franco-Russe de Mines de Cuivre Argentifère et de Métallurgie, the Société Anonyme des Mines Franco-Russes, with their respective capitals of 25,000,000, 15,000,000 and 12,500,000 francs, represent very substantial interests.

The English capital imported into Russia is mostly employed, as is well known, to work the Caucasian oil fields of Baku, Balachany, Apscheron, Bibi-Eybat, and judging from the lively interest the British public has evinced so far in the various Russian naphtha companies, shares of which were introduced on the London market, one may say that the current of English gold for the further development of our already highly developed oil industry has only just begun to flow. The

most notorious and successful among the English naphtha concerns are the Schibacff Petroleum Company, the Baku Russian Petroleum Company and the Russian Petroleum & Liquid Fuel Company.

German capital coming to Russia mostly turns to that branch of industry in which the Germans excel most of the European nations—namely, to electricity—and we find competing with each other in Russia with the same ardor as in the fatherland the branch establishments of the leading German electric undertakings. These are founded, of course, as independent Russian companies, with, in some cases, substantial share capitals.

Thus there is a Russian subsidiary company of the Allgemeine Elektrizitäts Gesellschaft, a Russian company of Siemens & Halske, Russian Schuckert Works, a Russian Union, a Russian Helios, &c. Speaking of other branches of industry, the Polish works of the Vereinigte Königs & Laurahütte might be mentioned, as well as the Moscow branch of the well-known Badische Anilin & Soda-fabrik, which, like the Russian branch

shares are dealt in on some foreign market, the Government does not trouble much about what profits are made by the promoters of a company, about the price at which the shares are bought on the market, or about the proportion between the share capital of a company and the amount of debentures issued; these all are points of highest interest, all being fixed by the Minister of Finance, when a company are founded under Russian law, the shares of whom are to be introduced on the Russian bourses. While the Russian legislator tries to protect the Russian shareholder against the possible exploits of some reckless promoter, he regards foreign financed companies only from the one point of view—namely, that the developing work done by the foreign company remains in the country once for all; that the products of the new industrial ventures take the place of products which had to be imported so far, and that therefore the balance of trade is ameliorated, that hundreds of thousands of work people find profitable employment, and that, last though not least, every new company who are registered in Russia represent a new object of taxation. For all these reasons our Government will not desist from its policy of fostering the inflow of foreign capital, in spite of the whining of some ultra-patriotic corporations and newspapers, who, repeating always anew the well-known cry of "Russia for the Russians," try to conceal under the mask of patriotism their mere jealousy of the profits reaped by the more enterprising foreigners.

The Buckeye Wood Split Pulleys.

In the construction of the Buckeye wood split pulleys by the Ohio Pulley Company of Marion, Ohio, poplar

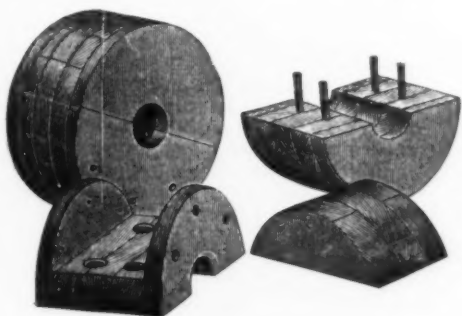


Fig. 1.



Fig. 2.

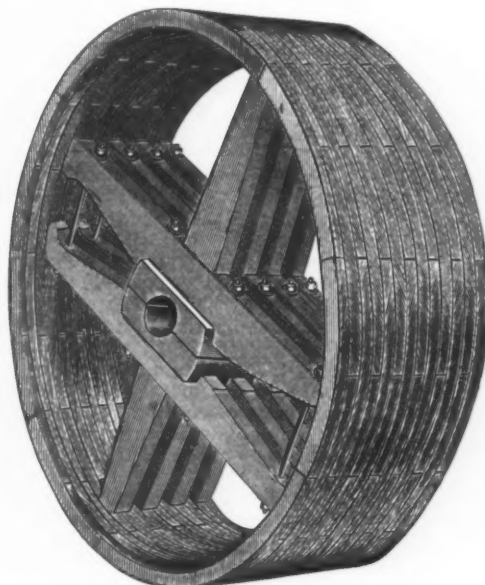


Fig. 3.

THE BUCKEYE WOOD SPLIT PULLEYS.

establishment of the renowned anilin color factories of Meister Lucius & Brüning, in Höchst, Germany, was founded as a separate company under Russian law. The aggregate share capital of Russian companies founded with German money amounts to about 160,000,000 marks.

Much has been said and still more has been written of late of American capital becoming interested in Russian industrial affairs. Thus, to mention one item only, it was said that large locomotive works were to be erected with American money somewhere in Siberia, and that the Government was to provide them with orders for the Siberian and the East Chinese railways, for both of which substantial orders have been executed of late years in the United States.

I have tried in the foregoing to describe how capital is flowing into the country from all parts and what a great portion of the development of her industries during the last few years Russia owes to capital of foreign origin. The Imperial Government fully recognizes the high value of foreign capital being imported into Russia, and our leading circles do not hesitate therefore to do everything in their power to promote its further inflow. Thus concessions to foreign companies are granted most liberally. As long as the companies are founded under the law of some foreign State, and as long as their

lumber is used exclusively for the rim, as that wood presents an admirable belt surface. All segments are keyed and the hub and arms are made of hard maple to provide strength where needed. The arms are dovetailed and dowel pinned into the rim and bolted to the hub. In constructing the arm the timber is placed edge-wise to the strain. Three sizes of these pulleys are here illustrated. The first is a small one, intended for high speed. It is made in all sizes from 3 to 11 inches in diameter, with any width of face. Pulleys of large size are shown in Figs. 2 and 3. All of these pulleys up to 30 inches in diameter are bored $3\frac{1}{2}$ inches, except those 6 inches and under, which are bored $2\frac{1}{2}$ inches. Thirty inches and up are bored 4 inches. By means of wood bushings the pulleys can be mounted on shafts of any size.

The Société des Aciéries de Longwy are paying a dividend of 10 per cent. The turn over of the company reached 27,412,925 francs, an increase over the preceding year of 3,698,730 francs. The net profit amounts to 7,235,841 francs, an increase over the preceding year of 1,589,632 francs. The mineral output of the company reached 609,147 tons, in addition to which they purchased 23,874 tons. The production of the blast furnaces reached 187,340 tons Thomas foundry iron, of

which only 11,770 tons were sold, the remainder being used for their own requirements. The steel works have produced 160,224 tons of ingots, 139,733 tons of rolled steel, and 90,454 tons of finished goods.

Lake Iron Ore Matters.

DULUTH, MINN., September 22, 1900.—There is considerable speculation now as to the price for lake ores for next year, and mining men in general look for a lower scale by at least \$1 to \$1.50 a ton. Mesaba producers who have this year sold at from \$4.25 to \$4.85 are figuring out that if they get \$3.25 to \$3.50 they will be satisfied. All of this reduction will not come from the mines; the lake freight will absorb about 70 cents of it. As a comparison it will be interesting to put down here the prices of leading ores for the past few years, as follows:

	1898.	1899.	1900.
Minnesota	\$3.36	\$3.45	\$6.25
Chandler	3.13	3.24	5.99
Pewabic	3.54	3.63	6.17
Aurora	2.95	3.07	5.62
Norrie	2.75	2.99½	5.50
Ashland	2.80	2.96	5.36
Brotherton	2.74	2.96	5.64
Atlantic	2.71	2.87	5.54
Iron Belt	2.77	2.80	5.16
Montreal	2.98	3.23	5.89
Palms	2.60	2.68	4.90
Grenada	2.61	2.81	5.30
Lawrence	2.58	2.75	5.25
Chapin	2.56	2.73½	4.96
New Era	2.64	2.88	4.96
Fayal	2.20	2.40	4.80
Champion	3.10	3.21	5.93
Lake Bessemer	2.85	3.03	5.44
Republic Special	3.65	3.85½	6.87
Republic Kingston	3.17	3.38	6.11

These are, of course, only a few of the many grades of lake ores, but they represent the general run of standard grades. A drop of, say, \$1 a ton would still keep them at a very fair price.

The Chandler Iron Company have just paid their second 50 per cent. dividend for the year, and many other companies are returning excellent money to their owners.

Shipments lately have been very badly broken, by the floods at Mesaba mines chiefly, for the largest shippers of the range have been out of the active list completely for a time. There was an overflow of water into the Mountain Iron mine (Carnegie) of about 80,000,000 gallons, which burst over the bank of a stream near the mine and flooded the property full in the night. When morning came there was one steam shovel with but the tip end of its crane sticking out of the water, and two others were badly buried. The mine's pumping plant was, of course, buried, and the management set about getting a big equipment, succeeding in assembling pumps to handle 9000 gallons a minute in an incredibly short time. These were set on flat cars and are being pushed down the tracks into the mine as fast as they lower the water. A bigger launder is being constructed, and the stream will be fixed so that by no possibility can such a disaster occur again. It will be some time before the mine is dry enough to ship heavily, though the upper shovels can work now. The Fayal's flood of water has been pretty well disposed of, and the other mines that have been troubled have about overcome the difficulties. Aside from this check to shipments, which shut off train crews and sent ore ships to grain ports, there has been some trouble at lower lake ports, and there is another blockade in the rivers by the sinking of a ship in the channel.

There is a determination on the part of State boards of equalization in both Michigan and Minnesota to change the taxable valuation on their mines. The Michigan board is working under a stringent law that compels the listing of all property at full market value, and they are increasing the mines many million dollars. They have raised the copper mines of Houghton County about \$40,000,000, thus doubling the valuation. Of course if other property is increased proportionately, and to the full market value, this will work no hardship; possibly the mines will pay actually less taxes than under the former régime, for it is always easier to put a high valuation on mines, &c., than on the property of farmers, for instance. In Minnesota there is no such law, but the State Board of Equalization has the right to raise, but cannot lower, any values they may deem insufficient. In this State your correspondent, D. E. Woodbridge, has been employed by the State to make a report on the taxation of mines and the valuation of the mining properties, and the matter is to be taken up by the board the coming week. All mining men of the State have been cited to appear and show cause why their valuations should not be increased. The present value of the mines of the State for purposes of taxation is about \$7,200,000, and it is quite likely, judging from

the action of the board in the case of other property, that it may be moderately increased. This is the only industry that the board has taken hold of, by the way, for which it has shown consideration enough to secure expert information additional to what it was in possession of.

The manganese of Copper Harbor, Keweenaw County, Mich., is to be mined for market by a company who are now commencing work. This manganese contains some copper, or all that has been won in the past did contain it, but to the present company this is said to be no detriment. Machinery and men are now going in and the property will be opened quite extensively the coming winter. There is an extensive lode of manganese near Copper Harbor.

Miners have been let out at a number of properties on the old ranges, some 250 having gone from the Regent mines (Carnegie) last week. The management make no attempt to deny that this decrease is the result of the present unsettled political situation, and say that they have a great many orders for finished material on their books, but that these have in so many cases been held off till later in the year that they are unable to mine so rapidly. They are, however, at the Regent, at least, shipping stock very heavily, in order to clean up the ground and get all mined ore down. Within the past two months 400 men have been discharged from this group of mines, and more than 1200 from the mines of the Michigan ranges.

Efforts are being made at many mines to get rid of stocks of ore, and there will be less ore on surface at the close of navigation than seemed likely a month ago. On the Menominee range stocked ore from the Crystal Falls group, the Columbia, Chapin and many more mines is being rushed now. On the Vermillion the stocks are pretty well gone, at the Chandler there are but 60,000 tons, at the Pioneer and the Oliver mines but 30,000, while at the Minnesota the stocks are small. The Chandler is shipping enough to make the season's total 650,000 tons and is employing 550 men; the Pioneer has shipped 400,000 tons, the Minnesota will make a total of 500,000 tons. There are about 1700 men working on the range. Wages at these mines are averaging about \$2.35 per day, as against \$1.65 in 1896 and 50 cents, when there was work for any, in 1893.

There is some little movement in properties. The explorations at Mesaba station on the Duluth & Iron Range Road continue, but the work so far is not up to the hopes excited by the first discoveries; still there is much ore there, and some 1,500,000 tons or more have been opened into. A part of the village of Virginia has been leased and will be opened at once, necessitating the removal of that portion of the town. A large body of ore, said to be 10,000,000 tons, has been found in the west part of 58-19, and is under negotiation for sale to Chicago interests. The Minnesota Iron Company are following ore downward in their Montana shaft, and are quite deep, the ore continuing. Water has been taken out of the Armenia, Menominee range, to such an extent as to permit an examination of the old stopes. The Rockefeller Company have paid \$37,000 for a tract adjoining the Mountain Iron on the east, in which about 1,700,000 tons exist. It will probably ultimately go into the hands of the Oliver Company for mining. An exploration is commencing adjoining the Sellers mine, at Hibbing. The Foxdale mine, at Humboldt, has been sold to Chicago capitalists, who will explore at once. The mine has been sunk 160 feet, and two drifts have been run, and 8000 tons of 62 per cent. ore stocked in the operations. The West Ludington of the Illinois Steel Company is to have a 24-drill compressor, and is to be pushed. This property has been explored without results till now, since 1881, more or less continuously, and fully \$500,000 have been expended there in the search. G. A. St. Clair, who is now on the Mesaba, and N. D. Moore, associated in the early days with the Gogebic, were among those who sunk money there. There is a possibility that something may be done with the Erie mine, near Republic, after a while.

There have been some important changes in the management of mines of late. G. W. Wallace, late of Fayal, has become general manager for Corrigan, McKinney & Co., taking the place vacant since T. F. Cole went to Duluth for the Oliver Company. Mr. Wallace will reside at Duluth and have charge of operations for the company on four ranges. W. J. Richards, his old mining captain at Fayal, becomes the manager of Commodore, vice J. H. Pearce, resigned. Edwin Ball, manager of the Minnesota mine, at Soudan, becomes manager of the Fayal, Genoa and Auburn, residing at Tower, to continue his management of Minnesota. Glen C. Brown, superintendent of Genoa, becomes assistant manager in charge at Fayal. A. H. Ahbe of Minnesota, becomes assistant manager in charge at Minnesota. F. E. Keese, mining captain of Genoa, becomes assistant manager in charge of Genoa. Several other changes are probable on some of the old ranges as a result of these.

The new ore dock of the Chicago, Milwaukee & St. Paul road, at Escanaba, will be ready for next year. It is 66 feet high, has 120 pockets of 250 tons each, is 720 feet long, with five tracks on the deck, and 6,000,000 feet of timber were used in the construction.

The Munising Railway and 100,000 acres of hard wood lands on the line of the road has been bought by Cleveland Cliffs interests, making more evident than ever the size and importance of this company's plans for expansion in the mining and smelting of their ores. This, with their other large purchases of late dates, gives the Cleveland Cliffs Company an enormous acreage of hard wood lands, several railway enterprises and an important total of subordinate interests.

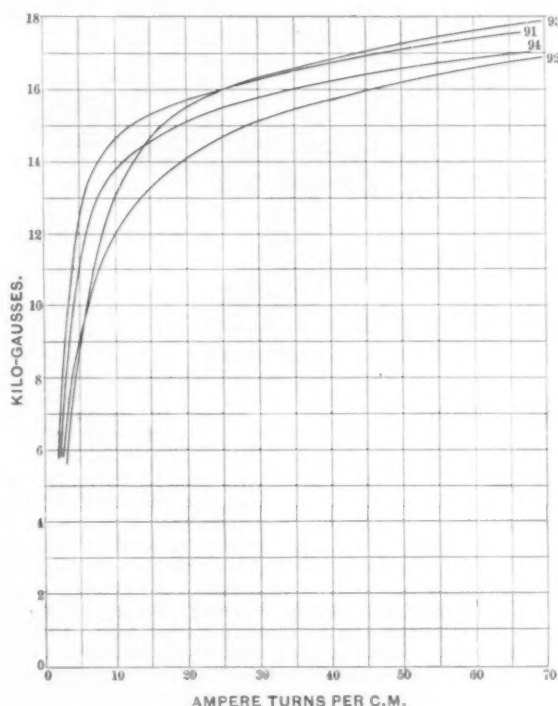
It is expected that two more ships will be let by the Carnegie Company soon for lake traffic, both to be of the largest size. All the newspaper talk of this company going into the construction of lake and ocean ships, denied in this correspondence three weeks ago, is now known everywhere to have been false. These two are the only ships let, or about to be let, by the company since last winter.

The Minnesota Company's steamship "Maricopa," towing two barges, delivered at South Chicago the other day 22,635 tons of ore from Two Harbors. This load was carried behind one engine, with 25 men on the steamer and 16 in the two barges, and was moved along at a sustained speed of 10½ miles an hour. The cost of hauling ore this year, including terminal charges, is about 50 cents a ton. Last year it was about 40 cents. The difference is wages and increased dock charges at the lower end. These will all necessarily be less next year.

D. E. W.

Magnetization Curves of Tropenas Steel.

The Logan Mfg. Company, Phoenixville, Pa., manufacturers of steel castings, have a modern and compact steel casting plant in successful operation at the above



No. 91.—Annealed Special Dynamo Magnet Steel.

Per cent.		Per cent.	
Carbon	0.11	Silicon	0.02
Manganese, under	0.05	Iron, over	99.7

No. 92.—Annealed Common Cast Steel.

Per cent.		Per cent.	
Carbon	0.21	Silicon	0.20
Manganese	0.61	Phosphorus	0.04

No. 93. Steel similar to No. 91.

No. 94. Steel similar to No. 91 unannealed.

MAGNETIZATION CURVES OF CAST STEEL.

place. They have 6 acres of ground, adjoining both the Frazer branch of the Pennsylvania Railroad and the Pickering Valley branch of the Philadelphia & Reading Railroad. The main foundry building is 100 x 150 feet, and built of corrugated iron and well lighted from overhead. It is equipped with an electric traveling crane and other modern foundry machinery. The process of steel making used is the Alexandre Tropenas method, and

we are informed by Jno. D. Logan, treasurer, that it is being operated with success, no difficulties being encountered in the control of the method or in the composition of the metal. This method, which might be called a modified Bessemer process, was fully described in the April 6, 1896, issue of *The Iron Age*. The pig iron and scrap, after being melted in a cupola, are transferred to a converter, not unlike the well-known Bessemer, but differing principally in the fact that the air is blown over the bath of metal, and not through it, as in the Bessemer process. The converter is of 2 tons capacity, a Paxson cupola of 5 tons per hour capacity being used to melt the original charges. The final charges of ferro-manganese and ferro-silicon are melted in a small cupola and added as required. Electric power is used exclusively, all machines, blowers, &c., being driven by independent motors. Castings of both light and medium weight are satisfactorily made, although at present the company can only handle castings up to about 3500 pounds each.

The line of work done is a general casting trade, with two specialties, machinery castings and castings for dynamos and electrical uses. We show herewith magnetization curves obtained by the Crocker-Wheeler Company by tests of this steel.

Chester's Steel Industries.

CHESTER, PA., September 22, 1900.—One of Chester's characteristic industries now, a feature by which it is best known in the business world, is the manufacture of steel castings. The business has centered here and Chester has become headquarters for the trade in the eastern section of the country. There are four large plants in operation now, and a fifth, the new Seaboard, is now so nearly completed that the company are booking orders for December deliveries. The main foundry building is practically completed and is one of the most imposing structures along the Delaware River front, being 560 feet in length and 110 feet wide. The machine shop, boiler and power house and producers for making gas are all covered by another large building, 380 x 100 feet, running at an L with the foundry. The buildings are all of steel, with brick side walls and slate roofs. The boiler installation is completely in place and ready for making steam, and the gas producers are nearly finished. The two large open hearth furnaces are well under way, and the cranes are being erected in the foundry. There will be ten cranes, ranging from 10 to 40 tons capacity, in the foundry, and the plant is so arranged that castings can be delivered directly from the foundry to the machine shop without being lowered from the cranes carrying them. Both the Pennsylvania and Philadelphia & Reading railroads have tracks in the Seaboard Company's yard, and the new wharf being constructed goes out to the deep water channel in the Delaware River. The company are operating their own gray iron foundry, making castings for their own purposes. It is understood that large purchases of steel scrap and other material have recently been made on this company's account. The Seaboard Steel Casting Company were incorporated in March last, and have a capitalization of \$500,000, fully paid. It will be one of the largest steel casting plants in the world when finished.

The main office of the American Steel Casting Company, the largest manufacturers of steel castings in the country, is located here. This company have plants in Alliance, Ohio; Pittsburgh and Sharon, Pa., in addition to the Chester plant.

The Penn Steel Casting Company, the Chester Steel Casting Company, the Solid Steel Casting Company, succeeding the old Eureka, are likewise located in this city.

The steel foundries now in operation employ about 1200 men, and the new Seaboard will increase this number to probably 1500; so it may be seen how important the industry is to Chester.

The active open hearth departments at this time in the city are the Tidewater Steel Company, with four 50-ton furnaces for ingots, not for steel castings; American Steel Casting Company, with two furnaces; the Solid Steel Casting Company, with one furnace; Chester Steel Casting Company, with two furnaces, and the Penn Steel Casting Company, with two furnaces.

A manufacturer in the Pittsburgh district has absolutely refused to furnish data relative to his business to the census of the United States Government. It is probable that suit will be entered to compel him to disclose the information desired. He insists, however, that he is prepared to make a test of the law.

Milkofsky Brothers, scrap iron dealers at Youngstown, Ohio, have been granted permission by the courts to change their name to Wilkoff.

The Risdon Shipbuilding Plant.

The Risdon Iron Works of San Francisco have recently purchased the property of the old Pacific Rolling Mill Company in the Potrero, San Francisco. This property consists of some 32 acres of ground, immediately adjoining the Union Iron Works, and has a deep water frontage of over 1700 feet. Application has been made to the Board of State Harbor Commissioners for a site for a new dry dock. This dry dock will be 500 feet in length by 100 feet in width. New wharves are now in course of construction. Several new steel frame buildings are contemplated, and large orders covering the structural materials for the following buildings have recently been placed: Machine shop, length, 308 feet; width, 100 feet; total lift over main floor, 45 feet. Boiler shop, length, 140 feet; width, 180 feet; total lift over main floor, 40 feet. Machine and ship blacksmith shop, length, 300 feet; width, 60 feet. Foundry, length, 177 feet; width, 160 feet, and ship joiner shop, length, 140 feet; width, 81 feet.

The machine shop will be equipped with four electric traveling cranes of the following capacities: One 50-ton, one 20-ton, one 15-ton and one 10-ton capacity. Each crane will be of the most modern type and equipped with 5-ton auxiliary hoists. The boiler shop crane equipment will consist of one 60-ton, one 20-ton and one 10-ton electric traveling crane—each equipped

with 5-ton auxiliary hoists. The foundry crane equipment will consist of one 30-ton and one 20-ton electric traveling crane with 5-ton auxiliary hoists. The ship blacksmith shop will be equipped with eight jib cranes of 5-ton each.

The machinery equipment throughout will consist only of the most modern tools. The entire plant, with the exception of the steam hammers in blacksmith shop, will be operated by electricity, and contracts have recently been placed with the Independent Electric Light & Power Company of San Francisco to furnish power for this plant. Direct current will be used for the cranes and an alternating current for the machinery equipment. Separate motors will be installed in each department. The cost of electric power for operation of this plant for the first year will amount to over \$30,000.

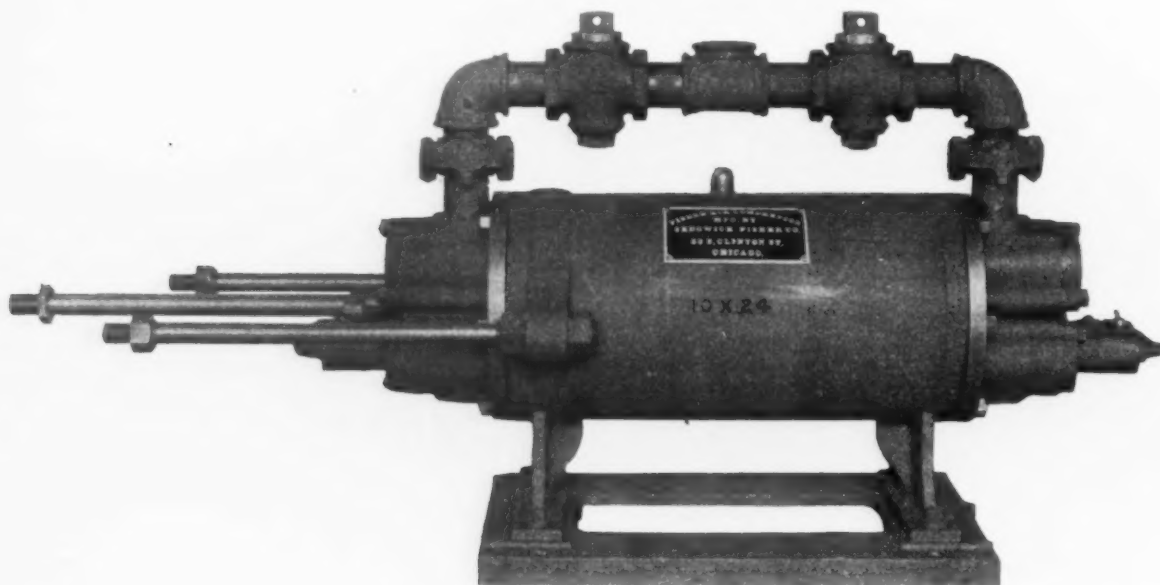
Risdon representatives are now in Washington preparing estimates for the new battle ships for the United States Navy, and will be prepared to contract for at least two of the new vessels.

The *Ironmonger* reports that the South Metropolitan Gas Company, Limited, have published some particulars of the preliminary tests made with American coal, of which they recently purchased 4000 tons. The tests are incomplete, inasmuch as they only refer to a small proportion of the cargo, and the figures may be affected by the results of the whole. Moreover, the American coal so far used was mixed with a certain proportion of British coal, and an experiment with American coal alone has not yet been completed. Such as it is, however, the test appears to justify the purchase. Laid down in London, the American coal cost about 27 shil-

lings per ton. Durham coal could have been bought at 16 shillings, f.o.b., or, say, 20 shillings per ton laid down in London. The last named yields on an average from 10,000 to 10,500 cubic feet of gas per ton. The American contractors, without giving a guarantee, suggested that their coal would yield over 14,000 cubic feet per ton. This estimate has not been reached, although the gas yield was found considerably in excess of that of Durham coal. The residual products yielded by the American coal are said to be of excellent quality.

The Fisher Air Compressor.

The air compressor built by the Sedgwick-Fisher Company of 33-35 South Clinton street, Chicago, is so designed that it may be attached tandem fashion to a steam engine, or it may be operated by belt power. Further, either compressor head and any other valves may be removed while the compressor is in motion without losing any of the air compressed. This is of decided advantage in case of a slight accident to the most vital parts of the compressor. The receiver pressure is automatically regulated to any desired pressure, which will be maintained, within 2 pounds, up to the capacity of the machine. No air is compressed unless the receiver pressure falls below the point set on the regulator, the result being a saving in fuel.



THE FISHER AIR COMPRESSOR.

The capacity of the compressor can be increased or decreased by a simple change in the diameter of the inner cylinder and piston. For instance, if the bore is 5 inches in diameter and the stroke 18 inches, the capacity may be increased by removing the 5-inch cylinder and substituting one that is 10 inches. No change is required in either the valves, cylinder heads or water jacket. This change can be quickly made and at a nominal cost. The valves are of tool steel and the valve seats can be removed and replaced by new ones at any time. Their construction will be understood from the sectional elevation, Fig. 2. Since the compressor is held firmly to the engine by tie rods, no foundation is necessary except enough to carry the weight of the compressor. The air cylinders are thoroughly cooled by water circulating through the jacket. The compressor is so arranged that the free air supply can be piped from the outside of the engine room.

The International Association for Testing Materials.

The programme of the annual meeting of the American section of the International Association for Testing Materials will be held in New York on Thursday, Friday and Saturday, October 25, 26 and 27, 1900. The sessions will be held at the house of the American Society of Mechanical Engineers, 12 West Thirty-first street, beginning at 3 p.m., on October 25. The first session will be devoted to reports from officers and the election of officers for 1900-1902. The evening session will be opened by the report of committee No. 1, and there will be a discussion of the specifications for structural steel for buildings, structural steel for bridges and snips and open hearth boiler plate and rivet steel recommended by

the American branch of committee No. 1. The morning session of the 26th is reserved for the reports of committees Nos. 2, 3, 4, 5 and 6, to be followed by a discussion of the specifications for steel rails and steel splice bars recommended by the American branch of committee No. 1. The business of the afternoon session will be reports of committees Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, and the discussion of the specifications for steel axles, steel tires and steel forgings recommended by the

Naval Architecture at the University of Michigan.

Prof. Herbert C. Sadler, late of Glasgow University, Scotland, has reported for duty at the University of Michigan and has begun work in the new course in naval architecture and marine engineering. Professor Sadler received his training in one of the principal ship yards

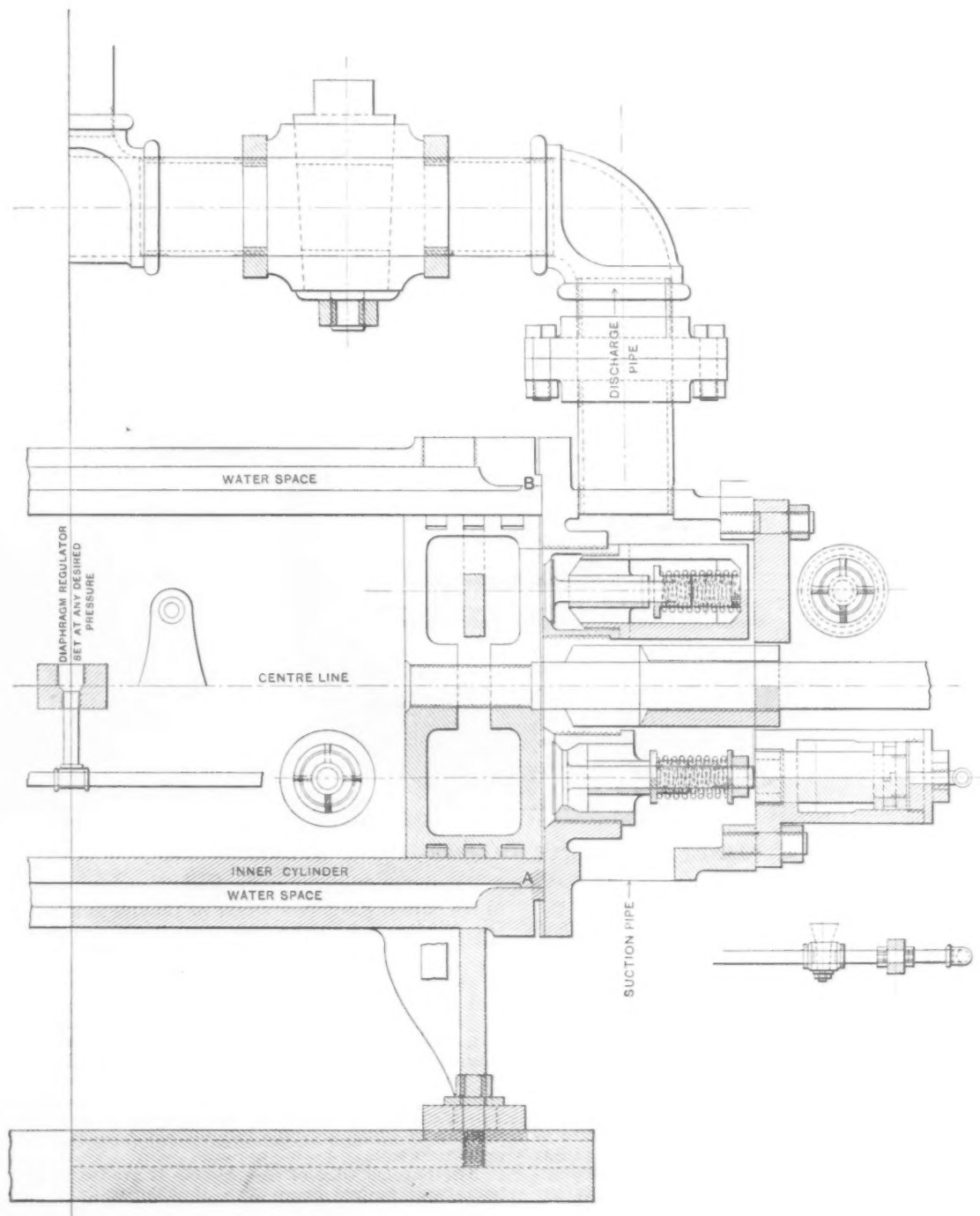


Fig. 2.—Sectional Elevation through Valves.

THE FISHER AIR COMPRESSOR.

American branch of committee No. 1. In the evening there will be the reports of committees Nos. 17, 18, 19, 20 and 22, and a discussion of the specifications for steel castings and wrought iron recommended by the American branch of committee No. 1. The business of the last session on Saturday morning will be: Report of the American Committee on Impact Tests. Report of the American Committee on Basic and Acid Open Hearth Steel. Report of the American Committee on Proper Heat Treatment for Iron and Steel. Report of the American Committee on the Relation between Chemical Composition and Physical Properties of Iron and Steel. Report of the American Committee on the Electrical Testing of Metals.

of the Clyde and at Glasgow University. For the last four years he has been assistant to Professor Biles, and has been associated with him in his practice as a consulting naval architect. He has had a large and varied experience in all branches of naval architecture on its practical side.

The course of instruction in naval architecture, which is arranged as a graduate course, will commence at the second semester of the senior year and extend to the end of the fifth year. At the end of the senior year students may receive the degree of Bachelor of Science in Engineering, and at the end of the fifth year that of Master of Science. Lectures will be given upon Ship Calculations, Strength of Ships, Resistance and Propulsion,

Stability and Rolling, Ship Design, Practical Shipbuilding and Marine Engine and Boiler Design. In the drawing class each student will perform all the calculations connected with a vessel, and will also prepare one or more designs, including plans and specifications.

Electrical Power in Great Britain.

During the course of the Bradford meeting of the British Association, Silvanus P. Thompson, professor of Physics at the Finsbury College of Technical Training, delivered a popular lecture, in the course of which he said:

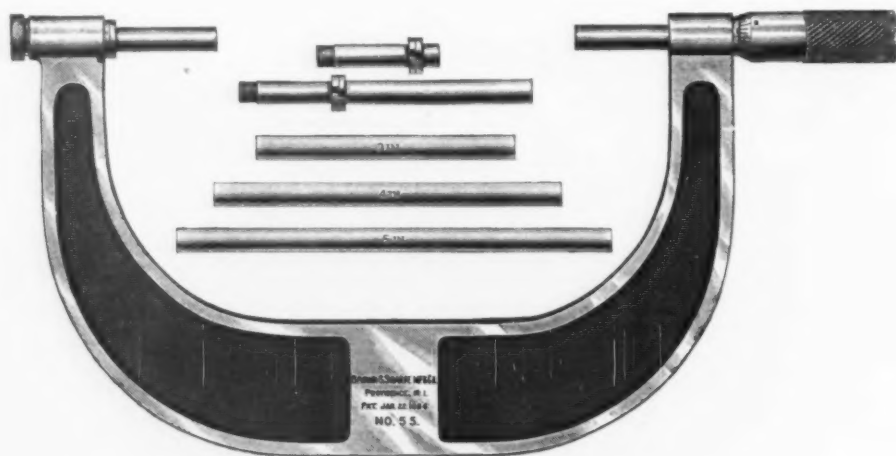
If we have not the water power in this country we have the coal fields, and if we would economize our stores, the coal must not be wasted by being burnt in little steam engines, or by using shafts and belts which absorb 25 per cent. of power. Let us economize our supplies. Let us not try to do on a small scale that which can only be done economically on a large scale. If you would have power generated economically in this country it must be done by going—not to that which we have not, the waterfalls—but by going to the pit's mouth. There burn your coal, and save the cost of transit. Do not burn it in small steam engines. Burn it under the boilers of large engines, or we may make a good, economical, non-illuminating gas, and use that gas to drive large gas engines, which are successful up to 500 and 1000 horse-power. A 1000 horse-power gas engine, provided with good economical gas, will give power day in

steam engines. The amount raised for power is ten times greater than the amount raised for lighting purposes. Now, when you have your industries driven electrically, the electric consumption of energy for power purposes will be a business ten times as great as the electric lighting of the towns and cities. But, in order to be economical, the business must be carried on by a consistent system over large areas, judiciously chosen centers, and not confined to the limits of one municipality.

New Brown & Sharpe Measuring Instruments.

The Brown & Sharpe Mfg. Company of Providence, R. I., recently introduced a micrometer caliper of new design and an inside micrometer gauge. The former, shown in the first engraving, measures all sizes from 3 to 6 inches in length, and 6 inches in diameter, by thousandths of an inch, but one-half and one-quarter thousandths are easily estimated. As the measuring surfaces are left square the caliper is especially useful in gauging under shoulder or measuring projections on a plane surface. Three anvils are furnished; the long one measures from 3 to 4 inches, the intermediate from 4 to 5 inches, and the short one from 5 to 6 inches. Each anvil is provided with means of adjustment for wear. They are easily and quickly inserted in the frame, and are held solidly to their bearings by a knurled nut.

The gauge or measuring screw is cut on the concealed part of the spindle and moves in the thread tapped



BROWN & SHARPE MICROMETER CALIPER—ABOUT ONE-HALF SIZE.

and day out, 24 hours in the day, and 365 days in the year, at the rate of \$20 per horse-power per year; and you cannot get that by a small steam engine. Mr. Kershaw, who has gone into elaborate statistics as to the cost of water power (where it could be had), steam power and gas power, has come to the conclusion that if it is done on a large scale, as they are doing it abroad, especially in Middle Europe, over a whole district, not over one city, large enough to be economical, you will be able, even with coal at its present price, to get your horse-power delivered to you electrically in your towns and cities and in your mills, cheaper than it could be made even by the power of Niagara. I look forward to the next half century with hope. I think of what has been done in this century—in the age of the steam engine—I think of what can be accomplished with our present knowledge in the next half century when we have electrical transmission of power—bringing cheap power and small power—and enabling the small man to get along as well as the large man because of the large scheme of power distribution. During the last session of Parliament there were sundry schemes for the establishment of great power centers. One was on the Tyne, others in Manchester, North London, and South Wales. These large power schemes, embracing whole counties, I look upon as by far the most important industrial step that can possibly be contemplated during the next few years. If you can give to the manufacturers of this country cheaper power, and in a form where it can so readily be turned to account for driving, or lighting, or heating, you will see a development and growth in the industries of this country the like of which we have not had under the age of steam. This cannot be done by individuals, or by parishes, or by municipal corporations, however enlightened. The corporations, when they saw the electric light was going to pay, put up their own electrical stations. Of the coal raised in this country a by far greater part is used for producing power by

in the barrel; the hollow sleeve or thimble is attached to the spindle and covers and protects the gauge screw. By turning the thimble the screw is drawn back and the caliper opened. The interchangeable anvils are held in place by a nut. The pitch of the screw is 40 to the inch. The graduations on the barrel in a line parallel to the axis of the screw are 40 to the inch; and figured 0, 1, 2, &c., every fourth division. As these dimensions conform to the pitch of the screw, each division equals the longitudinal distance traversed by the screw in one complete revolution, and shows that the distance between the points has been increased or diminished, according to which way the thimble has been turned, 1-40 or 25-1000 inch.

The beveled edge of the thimble is graduated into 25 parts, and figured every fifth division, 0, 5, 10, 15, 20. Each division, when coincident with the line of graduations on the barrel, indicates that the gauge screw has moved 1-25 of one revolution, or 1-25 of 25-1000 = 1-1000 inch. Hence to read the caliper, multiply the number of divisions visible on the barrel by 25; add the number of divisions on the scale of the thimble, from 0 to the line coincident with the line of graduations on the barrel, and note the length of the anvil that is in the caliper.

For example: Suppose the intermediate anvil to be inserted, or that to measure from 4 to 5 inches, and there are three whole divisions visible on the scale of the barrel, and five registered on the thimble; multiplying the former number by 25, and adding 5, the number of divisions registered on the scale of the thimble, the result is 80-1000 inch ($3 \times 25 = 75 + 5 = 80$). The distance between the measuring points would then be 4,080 inches.

Constant use will cause some slight wear on the gauge screw, and on the measuring surfaces brought in contact with the objects measured. To compensate for wear of the measuring screw there is a taper nut on the barrel, which when turned contracts the barrel and causes the screw to be held more tightly. In making

this adjustment the thimble should be withdrawn only far enough to use the small wrench furnished with the caliper. Each anvil is provided with an adjusting nut and a lock nut.

Inside Micrometer Gauge.

The micrometer gauge illustrated in Figs. 2 and 3 is intended for making inside measurements of rings, cylinders, &c. It consists of a holder provided with a micrometer screw and thimble. The screw has a movement of 1 inch; and by the use of extension rods measurements from 8 to 32 inches can be made by thousandths of an inch. The extension rods vary by 3 inches, the additional inch and the fractions of an inch being obtained by the measuring screw. Each rod has an adjustable measuring point and a lock nut, which are set to obtain the proper measurement of the given rod. The length of the gauge with the shortest extension rod is 8 inches. The micrometer portion of the instrument, as well as the provision for taking up wear, is similar to that just described.

Central Pennsylvania News.

HARRISBURG, September 24, 1900.—The Pennsylvania Steel Company have booked a number of important ex-

prevailing rate in this district. It is reported that the puddlers of the Susquehanna Iron & Steel Company will refuse to accept the reduction to \$3, which takes effect to-day. On the other hand, the 1200 men who have been out for several weeks at the plant of the American Iron & Steel Company, at Lebanon, have decided to accept the cut and return to work.

"Many of our contracts are now being placed with a string to them," said a prominent iron and steel manufacturer to-day. "If McKinley is re-elected they stand as good, but if defeated the contracts are canceled. There are also many gold-clause contracts. Much depends upon the election. If the present administration is continued, we have plenty of business ahead; otherwise the outlook is far from satisfactory."

The South Harrisburg Chain Works have increased their force of employees, and the prospects are encouraging for a large fall business.

All the reports this week are satisfactory. Most of the plants have not only better and more numerous inquiries, but orders are being placed, and a decided change seems to have come over the situation. In view of the unsettled conditions consequent upon a general election the iron and steel men are content.

Conditions at Danville are not at all encouraging. The Danville Rolling Mill Company are not operating their

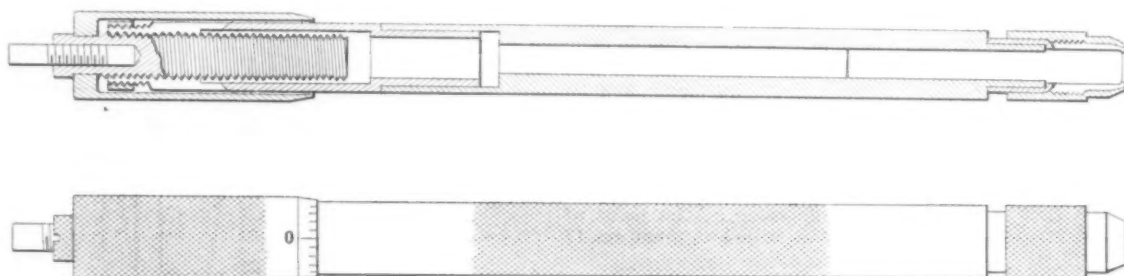


Fig. 2.—Detail of Inside Micrometer Gauge.



Fig. 3.

BROWN & SHARPE INSIDE MICROMETER GAUGE.

port orders for steel rails, and the inquiries are increasing. The East India Railway Company have placed an order for 6500 tons of rails, and another company for 3000 tons. It is expected that the first shipment on the East India Company's contract will be made about the latter part of October. An English concern had the first chance at this order, but their facilities were not equal to those of the Pennsylvania Company and the order came here. The output in every department of the Pennsylvania Steel Works was above the average last week, and some of the departments find it impossible to keep up with the hurry orders. A big steamer for the New York Dredging Company will be launched at Sparrow's Point on October 2. All the officials of the company will be present. Several other vessels are on the stocks. Only the visitor can appreciate the scope of the enlargements of the plant at Steelton. Acres of buildings are being erected, and the capacity of the plant will be tremendously increased. Machinery is now being installed in the new machine shop, and changes and improvements are going on throughout the plant. Several of the big furnaces in the open hearth department are being overhauled. The rail mill is now turning out material for the Havana Electric Railway. Special cars are being fitted up at the Pennsylvania Steel Works for the shipment to Chicago of girders of a peculiar pattern.

For the rest of this month the puddlers at the Chesapeake Nail Works will be paid \$4. They have been given notice, however, that for the two weeks succeeding they will receive \$3.50, and after that \$3, which is now the

mill, but will resume as soon as orders justify starting. The Danville Bessemer Company's plant is and has been shut down for several months. This plant is for sale. Home & Polk, structural tubing, &c., are running full and are very busy.

The Harrisburg Foundry & Machine Works continue excessively busy with plenty of orders and numerous inquiries. Shipments are being made to all parts of this country, and many fine engines are going abroad.

The Central Iron & Steel Company are running their various mills, and the Chesapeake Nail Works are also in operation. There is no suspension of the activity at the Harrisburg Boiler & Mfg. Company's plant, where the full force is working day and night.

The Officers of the Republic Iron & Steel Company.

At the annual meeting of the Republic Iron & Steel Company the following officers were elected: R. S. Warner, president; Geo. D. Wick, A. W. Thompson, G. Watson French, Wm. E. Taylor, vice-presidents; John F. Taylor, treasurer; Wm. Barret Ridgely, secretary; Harry Rubens, general counsel.

The directors who are to serve three years are: Randolph S. Warner, T. A. Meyenburg, John F. Taylor, G. Watson French, Alexis W. Thompson, Harry Rubens.

Those elected for the two year term are: August Belmont, Grant B. Schley, George R. Sheldon, Geo. D. Wick, W. E. Taylor, W. H. Hassinger.

The following directors are to serve one year: Myron C. Wick, Jas. C. Corns, L. E. Cochran, George M. Bard, Peter L. Kimberly, Archibald W. Houston.

The Executive Committee consists of the following: Randolph S. Warner, John F. Taylor, Alexis W. Thompson, George D. Wick, T. A. Meyenburg, G. Watson French, Harry Rubens, W. E. Taylor, W. H. Hassinger.

The Pressed Steel Car.

We take the following from a paper by Sumner B. Ely before the Engineers' Society of Western Pennsylvania:

Pressed steel, as we know it to-day, being quite a modern invention, it may be of interest to hear some of the details of its manufacture. I propose to talk on the processes and means of handling pressed steel in the construction of an all steel railway car, particularly as done by the Pressed Steel Car Company of Pittsburgh.

I have said that pressed steel was a modern invention; however, the idea of shaping steel by means of dies is probably very old, but the idea of pressing large plates into irregular shapes of all descriptions is quite new.

We are all familiar with the corrugated boiler flue.

There have been within the last 50 years a few attempts to build steel cars, but so far as I am aware, excepting the Schoen and Fox companies, these cars have been built like a bridge—i. e., of rolled sections and plates. These were not a success, probably due to both theoretical and financial reasons.

This brings us to the theory of pressed steel and its advantage over a built up structure. Expressed concisely, pressed steel gives us maximum strength for minimum weight. As an example take a channel say 30 feet long, which is used as a side sill of a car. Suppose that for purposes of strength we require the web to be $\frac{1}{4}$ inch thick and 17 inches deep at the point of greatest stress. If the channel is rolled it must be 17

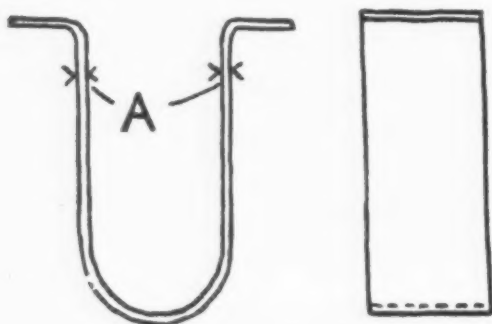


Fig. 1.—Stretch of Piece.

a capacity of 60,000 pounds, many less cars on the road; with that same reduction in journals, moving parts and train lengths, the advantage of which it is unnecessary for me to mention. A steel car always seems to me somewhat like a steel ship. If we had a vessel built of wood with the tonnage that the "St. Louis" has, it would have a greater displacement, or what is the same thing, weight, than has the "St. Louis." Certain it is that a car capable of carrying a heavy load is lighter when built of steel than of wood. This somewhat explains why a steel car has a less first cost per carrying ton than has a wooden one. So that not only does the steel car show a superiority in saving from dead weight, but also in first cost, outside of any gain due to longer life, saving in cost of repairs, &c.

I might here add that one of the first questions brought up is that of rust. This is a large subject which would take a paper by itself. Suffice it to say that so far experience has shown no trouble. The ordinary steel hopper bottom car has an inside bright like a shovel and the outside should be painted at least once a year.

You are probably all familiar with the manufacture of steel cars to a greater or less extent. The steel, after coming from the steel yard, goes into the shearing department, then to the pressing department, then to the punching department, and then into what is called the construction department. In this department the floors, ends and sides of the cars are assembled and riveted

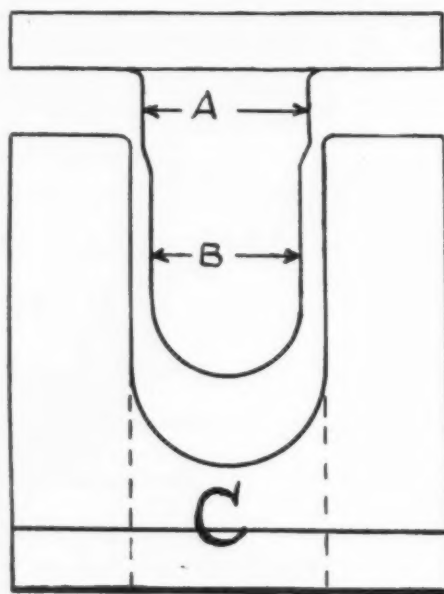


Fig. 2.—Outline of Top and Bottom Dies.

THE PRESSED STEEL CAR.

inches deep its whole length, whereas one that is pressed may be 17 inches at its center and taper to say 10 inches at its ends. Thus we have the same strength as given by the rolled section of uniform depth, and about one-third less weight. This principle of being able to place the metal where needed applies to all pressed steel work, and, as before stated, gives the necessary strength with the minimum amount of material.

Another immense advantage of a pressed steel car over one built of rolled shapes is the great reduction in the number of rivets. The pressed car is made of a few very large pieces pressed into the proper shape with necessary flanges, while the rolled car is made up of many small pieces and connecting angles; hence the very greatly increased number of rivets.

Let us look at what figures we obtain in the case of a pressed steel ore car such as used by the Great Northern Railroad (marked L. S. & I.). This car is of the double hopper bottom type and will carry 100,000 pounds of ore. The light weight of the car is 28,800 pounds, giving, with the load, a weight on the rails of 128,800 pounds. Now, dividing the total weight on the rails by the light weight, we obtain about 23 per cent., which represents the dead weight that must be hauled, while 77 per cent. of the total weight hauled is the paying load. Let us look at a wooden car as a comparison—the best of them will hardly show 35 per cent. dead weight. Granting a case of 33 per cent., we then find with the 23 per cent. of the steel car, a gain of 10 per cent. This means, not only with the same number of locomotives can 10 per cent. more paying load be hauled, but it means, remembering that the ordinary wooden car has

together, all the machine rivets being driven here. Then these parts go into the erection shop, where they are fitted together to form the car and finally hand riveted.

In the shearing department are shears of various sizes, kinds and capacities. However, most of the work is that of shearing plates, which seldom run thicker than $\frac{3}{4}$ of an inch. The special feature of this department is the various odd shapes that have to be cut, and many problems arise of laying out on a flat surface the shape of a complicated pressed piece. This will require some modification of the ordinary way of developing solids as given in text-books on descriptive geometry, due to the stretching of the piece, especially when the piece is to be pressed hot. These shapes involve many special shear knives, made with proper curves and offsets, as many of the cuts are impossible on the ordinary shear. Some pieces after pressing are trimmed by the shears, but a very great number are of such shapes that it is impossible to do this after once being pressed. Hence you can see the importance of getting the flat blank correct to start with. In the Fox Pressed Steel Company, in England, I noticed that they had several special machines and heads for shearing pressed shapes that the ordinary plate or angle shears would not catch. This, however, is an unnecessary operation, even from a standpoint of looks, as these pieces so trimmed were not seen when in position on the car, and illustrates the fact that the English devote more time to the finish of machinery than we here in America think necessary.

In the pressing department, which is perhaps the special feature of the business, there are presses of all sizes and capacities, from 30 or 40 tons up to 800 tons.

You are all familiar with the action of these presses, which are worked entirely by hydraulic pressure. Most are built by Bement, Miles & Co., and consist essentially of four upright columns set in a heavy iron foundation, at the top of which in a horizontal position is the top plate of the press; and against this comes a movable bottom plate, the piece to be pressed lying between the two. Very important factors in pressing are the dies or forms between which the piece is shaped. These dies are always made in two portions, the upper half being bolted to the top plate of the press and the lower half to the bottom. Naturally, from the work done these dies vary in size from the small ones of a few inches to ones that measure 10 or 15 feet; most of them are made of cast iron, and many have hard steel wearing strips that can easily be replaced when worn by the rubbing of the pressed pieces. It is hard to say what the best metal for a die would be, but I suppose some alloy will some day be found that may combine the necessary properties.

Some of the work done on these presses is done with the piece cold. Other shapes are such that it is impossible not to tear the piece unless it has been heated to a red heat. Some shapes are such that two, three or more pressings by different dies are necessary; each operation bringing the piece a stage nearer the shape desired.

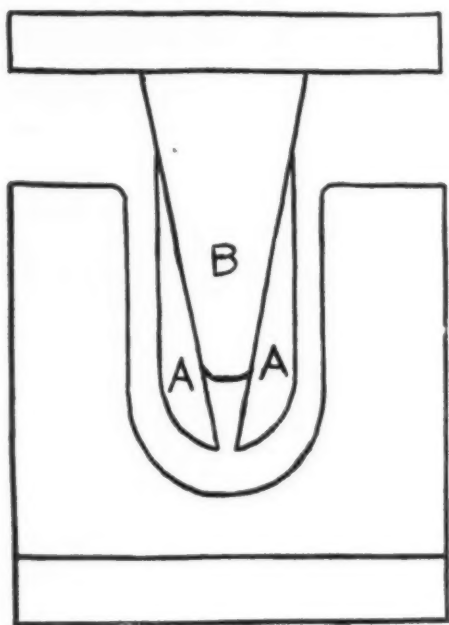


Fig. 3.—Form of Dies

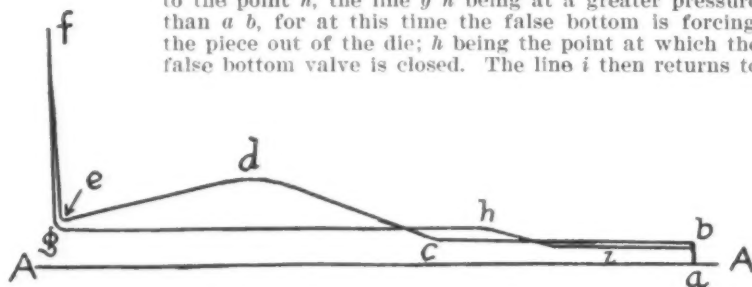


Fig. 4.—Card Diagram of Press.

THE PRESSED STEEL CAR

In hot work the dies will, of course, expand and contract with heat; a die 8 feet long will expand something like $\frac{1}{8}$ inch, and it is of course necessary that the dies be at the proper temperature, independently of what may be the temperature of the piece; so that here comes in a little complication and this point must be watched closely in order to obtain satisfactory results.

Another point in this connection, which I alluded to when speaking of shearing blanks, is the stretch of the pressed piece. The best way to make this clear will be to take an example of a piece of the shape of Fig. 1.

The steel used in this piece is $\frac{3}{4}$ inch thick, with a width of 6 inches. At the point shown by the dimensions A the thickness will be diminished about 1-16 inch; and as you caliper down from this point the thickness gradually increases to $\frac{3}{4}$ inch. The top flanges will show no appreciable stretch. The total length of the steel—about 60 inches—will stretch about 4 inches; so that the piece will be cut 4 inches shorter than the figured length would indicate.

The sketch, Fig. 2, shows the outlines of the top and bottom dies; the top die has an increase in width of $\frac{1}{2}$ inch at A over that at B, otherwise there would be a hump at these points on the inside of the pressed piece. The lower dies' sides are of course straight.

There is often trouble with the pressed pieces sticking to the dies and giving a distorted piece after it is pried out with pinch bars. On all large presses a false bottom is employed to overcome this. This is a movable piece for the bottom of the lower half of the die; and in Fig. 2 the dotted lines shown on the lower die

would represent the sliding surfaces; the whole portion C raising and thus pushing out the piece. This is actuated by a small piston inside the large piston of the press. Thick oil is also a help and has the advantage of saving the wear on the die; and also in hot work it burns on the piece, helping to keep the proper temperature while the piece is being adjusted to the gauges. Sometimes dies are constructed as shown in Fig. 3, still using the same shape already shown as an example. The upper portion of the die being made in three pieces, the portions A sliding on B; the wedges thus release as soon as the press is lowered.

Presses are also much utilized for gang punching, shearing and slotting. In these operations the same methods are pursued, the dies being constructed to hold punches or shear knives. Many odd shaped blanks are cut out complete at one stroke; it would be hard to say what maximum number of holes could be punched at one stroke; but if the punches are made in different lengths it allows an even distribution of pressure throughout the stroke. Thus by proper adjustment of this lead of one punch over another, according to the number of punches used, the maximum capacity of the press can be reached. The same may be said of the shearing, the proper angles being given to the knives.

If an ordinary steam engine indicator with the proper reducing valve be attached to the cylinder of the press, and a rig attached to the movable press plate, the accompanying card diagram will show the general results obtained when a single straight flange is turned up on a plate.

The line A A is the atmospheric line and the height *a b* shows the pressure required to lift the press, and with it the lower die and plate to be pressed on it. From *b* to *c* the press is steadily moving upward, and at the point *c* the material is engaged between the dies. From *c* to *d* the piece is being flanged, *d* being the point where the flange has gone through 45 degrees; this of course will be the maximum pressure required, and from here on the pressure falls to *e*. At *e* the two dies come together, and the full accumulator pressure is obtained, thus carrying the line to *f*. The moment the press is released the pressure falls to *g* and the press runs down to the point *h*, the line *g h* being at a greater pressure than *a b*, for at this time the false bottom is forcing the piece out of the die; *h* being the point at which the false bottom valve is closed. The line *i* then returns to

a, the press falling under the action of gravity; and the line *i* being slightly lower than *c b* as the exhaust water's friction in the pipes is overcome by the weight of the press only. From a study of this card it will be seen that the high pressure at *f* was not a necessary condition to do this work; that at *d* being all that is absolutely required. By practice and experiment it has been found that while some pieces of pressed work will require the full accumulator pressure, a very large number do not, as in the example taken above. Consequently if a device can be obtained by means of which we can obtain a higher pressure than the accumulator has, it will be a saving in many ways. This is done by means of an intensifier, under the press, operated on the principle of differential areas. To go back to our indicator diagram, *d* would represent the accumulator pressure and *f* the pressure after the intensifier has been thrown in. The theoretical gain will be immediately apparent, for in one case the steam pumps must keep the water pressure constantly at *f*, while in the other the accumulator will always be up at the pressure shown at *d*. Other advantages in the way of having less pressure on the main pipe lines, less friction, &c., are readily seen.

Leaving the pressing department the steel goes to the punches. Some few special machines are used, but mostly the ordinary single punch. The templets by which the position of the hole is marked on the piece are of the ordinary bridge type, and made generally of wood. As there must always be slight variations in pressed pieces, the ideal templet would be a flexible one, that would fit the piece closely under all conditions. If a material could be obtained like fairly hard rubber it would

be just the thing. Attempts at hinging and jointing templates have so far not proved very satisfactory.

The riveting machines used are of all sizes, shapes and kinds. The greater number are actuated by hydraulic power, but air is also used. Many pneumatic hand riveters, chippers, reamers, &c., are necessary. This department is nearest to bridge work, with the machines closely spaced and plenty of overhead cranes.

In the erecting shop the large parts of the cars are fitted together by night and riveted by day, a gang leader and gang being required to fit a certain number of cars ready for the gang and leader who come on in the morning to do the riveting; thus taking 24 hours to complete a car. I might state here that all work of all descriptions is done by piece work throughout the whole plant.

The cars lastly go into the paint shop for brake equipment, door adjustment, &c. The plant requires many additional departments, such as the truck shop, axle and wheel shop, pattern, machine and blacksmith shops; all supplying various parts but none of which contain any specially novel features.

The Populations of Cities.

Here are the populations of different cities as disclosed by the census:

	1900.	1890.	Increase.	Per Cent.
New York.....	3,437,202	2,492,501	994,701	37.90
Chicago.....	1,698,575	1,099,850	598,725	54.43
Philadelphia.....	1,293,697	1,046,964	246,733	23.57
St. Louis.....	575,238	451,770	123,468	27.33
Boston.....	569,892	448,477	112,415	25.06
Baltimore.....	508,957	434,439	74,518	17.15
Cleveland.....	381,768	261,353	120,415	46.07
Buffalo.....	352,219	255,664	96,555	37.77
San Francisco.....	342,782	298,997	43,785	14.51
Cincinnati.....	325,902	296,908	28,994	9.77
Pittsburgh.....	321,616	238,617	82,999	34.78
New Orleans.....	287,104	242,089	45,065	18.62
Detroit.....	285,704	205,878	79,828	38.77
Milwaukee.....	285,315	204,468	80,847	39.53
District of Columbia (including Washington).....	278,718	230,392	48,326	20.98
Newark.....	246,070	181,830	62,240	35.33
Jersey City.....	206,433	163,003	43,430	26.64
Louisville.....	204,731	161,129	43,602	27.06
Minneapolis.....	202,718	164,738	37,980	23.05
Providence.....	175,597	132,146	43,451	32.88
Indianapolis.....	169,164	105,436	63,728	60.44
Kansas City, Mo.....	163,752	132,716	31,036	23.39
St. Paul.....	163,632	133,156	30,476	22.89
Rochester.....	162,435	133,896	28,539	21.31
Denver.....	133,859	106,713	27,146	25.44
Toledo.....	131,822	81,434	50,388	61.88
Allegheny.....	129,896	105,287	24,609	23.37
Columbus.....	125,560	88,150	37,410	42.44
Worcester, Mass.....	118,421	84,655	33,766	39.89
New Haven, Conn.....	109,027	81,298	26,729	32.88
Syracuse, N. Y.....	108,374	88,143	20,231	22.95
Fall River, Mass.....	104,863	74,398	30,465	40.95
Omaha.....	102,555	140,452	*37,897	*26.98
Scranton, Pa.....	102,026	75,215	26,811	35.65
Lowell, Mass.....	94,969	77,696	17,673	22.23
Albany.....	94,151	94,923	*772	*0.81
Cambridge, Mass.....	91,886	70,028	21,858	31.21
Portland, Ore.....	90,426	46,385	44,041	94.95
Atlanta, Ga.....	89,872	65,533	24,339	37.14
Grand Rapids, Mich.....	87,565	60,278	27,287	45.27
Dayton.....	85,333	61,220	24,113	39.39
Richmond, Va.....	85,050	81,388	3,652	4.50
Nashville, Tenn.....	80,865	76,158	4,697	6.17
Hartford, Conn.....	79,850	53,230	26,620	50.01
Reading, Pa.....	78,961	58,661	20,300	34.61
Camden, N. J.....	75,935	58,313	17,622	30.22
Trenton, N. J.....	73,307	57,458	15,849	27.58
Bridgeport, Conn.....	70,996	48,866	22,130	45.29
Lynn, Mass.....	68,513	55,727	12,786	23.42
Oakland, Cal.....	66,960	48,682	18,278	37.55
Lawrence, Mass.....	62,559	44,654	17,905	40.10
New Bedford, Mass.....	62,442	40,733	21,709	53.30
Des Moines, Iowa.....	62,139	50,093	12,046	24.05
Springfield, Mass.....	62,059	44,179	17,880	40.47
Summersville, Mass.....	61,643	40,152	21,491	53.52
Manchester, N. H.....	56,987	44,128	12,861	29.15
Utica, N. Y.....	56,383	44,007	12,376	28.12
Hoboken.....	56,364	43,648	12,716	29.15
Peoria, Ill.....	56,100	41,024	15,076	36.75
Charleston, S. C.....	55,807	54,955	852	1.55
Savannah, Ga.....	54,224	43,189	11,055	25.60
Salt Lake City.....	53,531	44,834	8,698	19.37
San Antonio, Texas.....	53,321	37,673	15,648	41.54
Duluth, Minn.....	52,969	33,115	19,854	59.95
Erie, Pa.....	52,733	40,634	12,099	29.78
Elizabeth, N. J.....	52,130	37,764	14,366	38.04
Kansas City, Kan.....	51,418	38,318	13,102	34.19
Harrisburg, Pa.....	50,167	39,385	10,782	27.38
Portland, Maine.....	50,145	36,425	13,720	37.67
Yonkers, N. Y.....	47,931	32,033	15,898	49.62
Norfolk, Va.....	46,624	34,871	11,753	33.70
Waterbury, Conn.....	45,858	28,646	17,212	60.09
Holyoke, Mass.....	45,712	35,637	10,075	28.27
Ft. Wayne, Ind.....	45,115	35,393	9,722	27.47
Youngstown, Ohio.....	44,885	33,220	11,665	35.11
Covington, Ky.....	42,938	37,371	5,567	14.90
Akron, Ohio.....	42,728	27,601	15,127	54.81
Saginaw, Mich.....	42,345	46,322	*3,977	*8.59
Lancaster, Pa.....	41,459	32,011	9,448	29.51
Lincoln, Neb.....	40,169	55,154	*14,985	*27.17
Brockton, Mass.....	40,063	27,294	12,769	46.78
Binghamton, N. Y.....	39,647	35,005	4,642	13.26
Augusta, Ga.....	39,441	33,300	6,141	18.44
Pawtucket, R. I.....	39,231	27,633	11,598	41.7
Altoona, Pa.....	38,973	30,337	8,636	28.47
Mobile, Ala.....	38,469	31,076	7,393	23.79
Birmingham, Ala.....	38,415	26,178	12,237	46.75

Little Rock, Ark.....	38,307	25,874	12,433	48.05
Galveston, Texas.....	37,789	29,084	8,705	29.93
Haverhill, Mass.....	37,175	27,412	9,763	35.62
Terre Haute, Ind.....	36,673	30,217	6,456	21.37
South Bend, Ind.....	35,999	21,819	14,180	64.99
Salem, Mass.....	35,956	30,801	5,155	16.74
Johnstown, Pa.....	35,936	21,805	14,131	64.81
Elmira, N. Y.....	35,672	30,893	4,779	15.47
Davenport, Iowa.....	35,254	26,872	8,382	31.19
McKeesport, Pa.....	34,227	20,741	13,486	65.02
Springfield, Ill.....	34,159	24,963	9,196	36.84
Chelsea, Mass.....	34,072	27,909	6,163	22.08
Chester, Pa.....	33,988	20,226	13,762	68.04
Malden, Mass.....	33,664	23,031	10,633	46.17
York, Pa.....	33,654	20,793	12,861	61.85
Topeka, Kan.....	33,608	31,007	2,601	8.39
Newton, Mass.....	33,587	24,379	9,208	33.77
Sioux City, Iowa.....	33,111	37,806	*4,695	*12.42
Taunton, Mass.....	33,036	25,448	5,588	21.96
Bayonne, N. J.....	32,722	19,033	13,689	71.92
Chattanooga, Tenn.....	32,490	29,100	3,390	11.65
Fitchburg, Mass.....	31,531	22,037	9,494	43.08
Superior City, Wis.....	31,091	11,983	19,108	159.46
Joliet, Ill.....	30,720	23,264	7,456	32.05
Canton, Ohio.....	30,667	26,189	4,478	17.10
Butte, Mont.....	30,470	10,723	19,747	189.16
Montgomery, Ala.....	30,346	21,883	8,463	38.67
Auburn, N. Y.....	30,345	25,858	4,487	17.35
East St. Louis.....	29,655	15,169	14,486	95.50
Sacramento.....	29,282	26,386	2,896	10.98
Racine, Wis.....	29,102	21,014	8,088	38.49
La Crosse, Wis.....	28,895	25,090	3,805	15.17
Williamsport, Pa.....	28,757	27,132	1,625	6.99
Newport, Ky.....	28,301	24,918	3,383	13.58
Oshkosh, Wis.....	28,284	22,836	5,448	23.86
Pueblo, Col.....	28,157	24,558	3,599	14.56
Atlantic City.....	27,838	13,055	14,783	113.24
Passaic, N. J.....	27,777	13,023	14,754	113.21
Bay City, Mich.....	27,628	27,539	*89	*0.32
Lexington, Ky.....	26,369	21,567	4,802	22.27
Gloucester, Mass.....	26,121	24,651	1,470	5.96
South Omaha, Neb.....	26,001	8,062	17,939	222.51
New Britain, Conn.....	25,998	16,519	9,479	57.38
Council Bluffs, Iowa.....	25,802	21,474	4,328	20.15
Cedar Rapids, Iowa.....	25,656	18,020	7,636	42.38
Easton, Pa.....	25,338	14,481	10,757	74.28

* Decrease.

Railroad Awards at Paris.

The following is a list of the awards at Paris in class 32, including material of railroads and tramways:

Grand Prize.

United States Railway Mail Service.
The Baldwin Locomotive Works.
The Pressed Steel Car Company.
J. G. Brill Company.
Westinghouse Air-Brake Company.

Gold Medal.

The American Railway Association.
Master Car Builders' Association.
The American Railway Master Mechanics' Association.
Gould Coupler Company.
The McConway & Torley Company.
The International Pneumatic Railway Signal Company.
Standard Steel Works.

Silver Medal.

The Railroad Gazette.
The Railway Age.
Engineering Record.
Western Society of Engineers.
Street Railway Publishing Company.
Ashcroft Mfg. Company.
Crosby Steam Gate & Valve Company.
Diamond State Steel Company.
The International Brake-Shoe Company.
United States Metallic Packing Company.
Fairbanks, Morse & Co.
Galena Oil Company.
Goodwin Car Company.
Peckham Truck Company.

Bronze Medal.

American Locomotive Sander Company.
American Railway Publishing Company.
McKee, Fuller & Co.
Weber Railway Joint Mfg. Company.
Bonzano Rail Joint Company.
Christensen Engineering Company.

Collaborators.

Gold Medal.

S. Vauclain, Baldwin Locomotive Works.
W. F. Richards, Gould Coupler Company.
H. C. Buhoup, McConway & Torley Company.
C. T. Schoen, Pressed Steel Car Company.

Silver Medal.

E. C. Thurber, Galena Oil Company.
W. D. Sargent, International Brake Shoe Company.
E. A. Schoen, Pressed Steel Car Company.
J. M. Hanson, Pressed Steel Car Company.

Bronze Medal.

J. C. Davis, International Brake-Shoe Company.

A recent amendment to the German industrial code which comes into force on October 1 requires the closing of all stores and business houses at 9 o'clock p.m. A local option clause permits closing an hour earlier—namely, at 8 p.m. To secure this hour of closing one-third of the storekeepers in the aggregate or in particular branches of trade may petition the city officials to submit the question to a vote and if two-thirds of all the proprietors are favorable, the law requires all storekeepers to close at the earlier hour. The agitation in favor of earlier closing hours, under the new law, is spreading throughout the larger cities of Germany.

Trusts Abroad.

Professor Jenks' Report on Syndicates in England, Austria, Germany and France.

WASHINGTON, September 25, 1900.—The Federal Industrial Commission has received from Prof. J. W. Jenks of Cornell University, the "trust expert" of the commission, a preliminary report upon the investigation of industrial combinations in Europe, upon which he has been engaged for several months, and in connection with which he has visited leading trade centers abroad. Although designed to be followed by a more elaborate monograph on the subject, Professor Jenks' report is quite lengthy and considerable space is given to a record of his observations concerning combinations in the iron and steel trade. Following is an abstract of those features of the preliminary report of interest to the readers of *The Iron Age*:

England.

"There seems to be no popular excitement in England on the subject of trusts, although it is evident that a good many combinations have been formed, and the tendency to their formation is on the increase, more having been formed in the last two years than in any corresponding period preceding. While there is a little talk of trusts or of combinations, there is a great deal of talk also of the abuses of the corporation law, and there is at present before the House of Commons a government bill amending the corporation act of 1862, so as to prevent these abuses. It is interesting to note that the abuses detailed in England at so great a length would appear to be very similar to those enumerated by the Industrial Commission, and still further that the remedies suggested in England agree in good part with the remedies suggested by the Industrial Commission, although in some lines they do not go so far.

"In England publicity is regarded as the real remedy for the abuses of industrial combinations, and many influential men there think the Government can go no further than to secure publicity. The causes for the formation of a combination in England seem to be substantially the same as in the United States. In the first place, they all speak of competition so severe that they were all losing money until the combination was entered into. In several instances the capitalists say that a combination would give them far greater strength in their contest with their workmen. It is expected that a combination will be a source of saving in a good many particulars. In some instances the services of large numbers of traveling men have been dispensed with, the cost of superintendents has been dispensed with. In cases in which an industry has been handed down for several generations, and the management has been careless, it has been found that large numbers of workmen could be dispensed with. This seems to be something which is rarely found in the United States, but it is quite common in England, owing to sons succeeding their fathers in the same line of business. The work could in a great many cases be better distributed among different plants, so as to effect a saving. In the combinations which have been investigated little has been said about the saving in freight, in virtue of the fact that shipments can be made from the nearest plant. Freight discriminations in the interests of the largest shippers are not complained of generally.

"There have been a good many promoters here of the Hooley type, who have made large sums of money through inflation of stock, but so far as these later combinations are concerned, the usual promoters have been trained auditors and accountants, and the combinations seem to have been organized on a thoroughly conscientious basis. In each case a careful appraisal has been made and the books examined by licensed accountants, and the capitalization fixed either on the basis of the appraisal or on the capitalization of the profits for a series of years preceding, or both.

"Some allowance has usually been made for good will, but this good will has been fixed ordinarily on a certain percentage on the capitalization, usually not over 20 or 25 per cent., and the amount has been fixed by previous earnings. In the case of these later combinations, it is specifically denied that the prospective earnings coming from the capitalization have been taken into account in fixing the good will.

Austria.

"On comparing the governments of Europe with that of the United States, as regards their attitude toward trusts, the Government of Austria is probably the most interesting one. This comes from the fact that in the making and administration of its laws regarding trusts it is, to a slight extent at any rate, to be compared directly with the United States. The movement toward

the formation of industrial combinations may be said to have begun soon after the industrial crisis of 1873. Some of the more important of the agreements which exist even to the present day, especially those among the iron producers, were made late in the 70's. The most common form of agreement is one that fixes the amount of production for each one of the members of the combinations and which binds him to produce no more than the amount thus fixed by the central committee. Sometimes the agreement includes also the fixing of the selling price by the central committee, but in perhaps more cases the price is not a matter of definite agreement. If any one of the members of the organization sells more than the share allotted to him he must pay into the treasury of the combination the surplus, to be divided proportionately among the various members. Very frequently these agreements are limited to the home market, the production for export being left entirely free.

"The power which a combination has exerted over prices and the fact that in not a few cases they have been raised somewhat has led to considerable feeling against the combinations. This feeling was reflected in the Government administration and in the Legislature by one or two more or less complete investigations that have been made regarding the combinations. The Government, however, has not as yet reached any definite conclusion regarding the subject as a whole.

"On the other hand, the feeling against the combinations has found expression in some decisions of the courts. The old law of 1870 mentioned incidentally that combinations for the purpose of increasing prices to the detriment of the public were illegal. When the law was passed it seemed to have an entirely different purpose, and this phrase, 'to the public detriment,' was largely an incidental one. Lately, however, some members of the industrial combinations have violated their contracts and gone out of the combinations. When the combination attempted to secure the forfeit provided, the member withdrawing insisted that the contract was illegal and that in consequence the forfeit could not be collected. The matter was taken to the courts, and in two important decisions of the Supreme Court and in a third decision of the lower courts, which has not reached the Supreme Court, this view was upheld. The courts refused absolutely to enforce the contract among the members of the combination, on the ground that the contracts themselves tended to increase prices to the detriment of the public. That has been held, although in some special case it was shown that there had been no specific increase of price in that special article. The power was held to be contrary to the public welfare.

"The iron combination controls practically all of the iron manufacturers of Austria, and at the present time they have also a working agreement with practically all of the Hungarian manufacturers. Just at the present moment one of their Hungarian members has purchased the largest independent plant and has not yet brought that independent plant into the agreement. It is naturally asking for as large a percentage of production as possible to be allotted to this proposed new member, while the managers of the combination wish to keep its percentage down. Some think that this may lead to a break up of the combination. But the men in the combination itself do not anticipate such a result. They anticipate simply a little delay while they are making satisfactory arrangements.

Germany.

"On the whole, Germany seems to be more favorable to large industrial combinations than any other European country. Some of the German writers estimate that the number of combinations in Germany is as large as 300 (345 in 1897), and that nearly every industry (224 in raw materials and manufactures) of prominence is in the control of some of these combinations. The form of the combination in Germany is much the same as that in Austria.

"The largest and apparently most successful combinations in Germany are those in the coal mining industry and in the iron industry. The coal combination includes the whole of the mines of any consequence at all in the western part of Germany, which is by far the most important portion. They have a central committee, whose business it is to receive all orders and to distribute these orders in the wisest way among the different mines. The prices to the different customers are fixed by this Central Executive Committee, and it has full discretion with reference to the way in which it shall deal with both the customers and the mines, subject, of course, so far as the latter are concerned, to the decisions of the general assembly, representing all the mines. This organization has been in existence now for several years, and has, on the whole, succeeded in holding its own thoroughly well. During the past two years, since there has been so uncommon a demand for coal, it has not been able to meet all the demands

from manufacturers, and consequently there has been much complaint against it on the part of those manufacturers. Not long since a meeting called by one of the Chambers of Commerce was held to protest against the restriction of the output by the coal combination, and its refusal to sell in whatever quantities might be demanded to small dealers as well as large. The combination excuses its action on the following grounds: It declares that in the first place the demand for the present is an extraordinary one, and one that cannot be expected to last for any length of time. It is working its mines to their full capacity with the present laboring force and machinery and it thinks it would not be justified in going to large additional expense to put in more mining machinery and engage large numbers of extra men that could not be used for more than a few months in all probability before the demand would fall off. If that should be the case, of course it would be compelled then to discharge some of its men and to leave much of its plant standing idle. It claims that it has been extremely conservative with reference to increasing its prices, and that prices would have been very much higher had no trust existed. Individual mines competing among themselves, under the temptation of the extraordinary demand, would certainly have increased prices to a very great extent, without regard to the future; but they, the members of the combination, have felt that it was both wiser for themselves and much better for the public to keep prices stable—high enough to return a good profit, but not high enough to stimulate too great an overproduction on the part of any one. This view, that they have been conservative in the control of the market, and that they, on the whole, kept prices down rather than put prices up during the last two years, seems to be shared by nearly all the business men that I have met. One of the members of the cabinet of Prussia expressed a similar opinion in the Prussian legislature.

"This combination employs, if I have the figures well in mind, more than 200,000 miners on the whole, and the managing director told me that under the circumstances it seemed to them by far the wisest plan to see to it that these miners are steadily employed year in and year out at full wages, rather than to attempt to push the output to the utmost in periods of great prosperity, like the present, and be compelled within a year or two to diminish the production, with the necessity of discharging many of their men and of losing much of their capital. When asked whether the men themselves agreed, he replied that the larger part of the men who had been with them the longest, and even some of those who had been prominent in the strike a few years ago, thought this was the best plan. However, several of the workmen, especially those with socialistic inclinations, did not agree, and were inclined to denounce the trust; but they had had no difficulty with their men for a long time, and he thought that their policy was justifying itself in the eyes of the workmen, as well as of the more intelligent members of the community.

"The iron industry is organized into five large combinations along different lines, and the most important and apparently the most successful is that among the manufacturers of pig iron in Western Germany. The others seemed to be organized after the same model, but as yet have not succeeded in securing so firm an organization. While the coal combination publish their articles of association and give without much hesitation to the public their annual reports, the iron combination have not given out to any one their articles of association, and have, on the whole, conducted their business much more secretly than, perhaps, any other of the large combinations. I had much more difficulty in finding out anything regarding this combination, and have not been able to get in detail their articles of association, although their general plan of work and, on the whole, the effect of their combination I have secured. Their general plan of organization is substantially the same as that of the coal miners. Their output is determined by the central committee. There is a selling bureau to dispose of their products. This syndicate has some 60 members, practically all of the producers of pig iron, although there are a few small producers outside. In order that the members may be held to their agreements, they have securities deposited and blank acceptances for drafts left in the hands of the central committee. If they violate their agreements, the amount of the forfeit is calculated, filled on the blank acceptances, and the central committee thus imposes the fine. While this is the plan, it is said that they have never yet had to enforce it. It was hinted to me by the managers of some of the other combinations that this one had not been so moderate in restraining prices during the last year or two as would have been wise. The directors themselves, however, claimed that in spite of the demands of the members they have held prices down far below what the demand would have justified, and that they have not increased prices to anything like the same extent that prices in

the United States have been increased. They have also a selling bureau, with full power, as has the coal combination.

"I learned from them also that there had been considerable talk of an international combination along certain lines, and it seemed to be the case that the French and Belgian pig iron manufacturers do work more or less in harmony with the German manufacturers. Lately a meeting was held, with American, English and German representatives, to see if an international combination along certain lines of iron manufacture (not of pig iron) could not be brought about. The result is not yet known.

"The courts in Germany would seem, on the whole, not unfavorable to the combinations. Any contract made that is contrary to good morals would, of course, be held void in Germany, as in other civilized countries; but these combinations have not been so considered by the courts, and there are some decisions already made which upheld these contracts. The contracts of the coal syndicate in certain particulars, for example, have been substantially affirmed as valid and enforced by the courts. One of the most interesting and valuable parts of the whole study of combinations in Europe is the legal situation in the different countries. England and Germany seem to be considerably more favorable to the combinations than are Austria or France. In Germany, however, where these combinations take the form of corporations they are under very rigid supervision, are required to furnish balance sheets annually showing the state of their business, and on this account probably very few comparatively of the combinations have taken the form of corporations, although the selling bureaus are themselves sometimes incorporated.

France.

"The movement toward combination has apparently developed less rapidly and less completely in France than in any other of the leading European countries. There are, nevertheless, quite a number of combinations, some of which are of a great deal of importance.

"Some branches of the iron trade are organized more or less fully. The most successful one, which has been running now for ten years, is the Comtoir, at Longwy. Here the plan of organization is substantially the same as that already mentioned for Germany, with a percentage of output determined by the manager, and a selling bureau whose duty it is to receive all orders and to distribute them in accordance with the agreement among the different plants.

"The law in France seems to have made a good deal of trouble for these combinations. Section 419 of their penal code declares that misleading statements for bringing about the raising or lowering of the price, different to what it would be under free competition or under any coalition or agreement for similar purposes, is not only void, as in Austria, but it is also criminal, and those taking part in it are subject to a penalty for crime. There have been within recent years apparently some cases where this law has been applied, and although most persons in France are of the opinion that it would be very difficult to enforce the law, nevertheless manufacturers are afraid of it. In consequence, it is difficult to get hold of definite information regarding the working of these organizations.

"Some years ago a law for the formation of so-called professional syndicates was passed in France. This was intended largely for the benefit of workmen, and for enabling the employers, in connection with their workmen, to form organizations for the general benefit of the trade. Under this law apparently some combinations that are looking toward capitalistic organizations of the kind called trusts are moving. The shipbuilders of France, with one exception, and the manufacturers of railway supplies of all kinds, without any exception, are organized into syndicates. The central office is supposed to look after matters of legislation that may concern the industry, and to see to it that information regarding new patents, new processes and other matters of the kind is circulated among the members. It may also be noted, incidentally, that when the managers are consulting on matters of general importance of the kind mentioned they discuss more or less questions regarding prices, limitation of output, &c., so that under this law, which was intended chiefly for the workmen, was discovered a means for the organization of large capitalistic combinations. The general opinion seems to be that this movement in France is, on the whole, increasing, as in other countries, but so far it has not reached the same extent."

W. L. C.

The Kinnear Mfg. Company, Columbus, Ohio, have just completed a steel rolling door for a car house at Worcester, Mass., which is 35 feet 6 inches wide and 20 feet high. This is said to be the largest door of the kind so far built.

The Boiler Makers' Meeting.

CINCINNATI, Ohio, September 22, 1900.—The second and third days' meetings of the American Boiler Makers' Association at Cincinnati, Ohio, were largely devoted to executive sessions, and throughout these, as through the remainder of the convention, there was a lack of formality which was enjoyed exceedingly by the assembled members. All of the discussions were almost conversational in their simplicity. There was not a single prepared paper read on any of the subjects brought before the association. The sessions were held twice each day and were not of a protracted nature. At this time the city of Cincinnati was indulging herself in a fall festival, and the consequent opportunities for social relaxation and pleasure seeking were made the most of by the visiting members; in this they were undoubtedly well coached and otherwise looked after by the local committee, consisting as follows:

LOCAL COMMITTEE.

Cliff. M. Tudor, chairman, Tudor Boiler Mfg. Company.
Charles Neblett, secretary, Reading Iron Company.
John A. Pitts, Lewis & Neblett.
D. D. Jones, D. T. Williams, Wm. Minsch, S. Moyer, Lunkenheimer Company.
W. H. D. Totten, J. Stevens, Carnegie Steel Company.
Clifford R. Barnett, Barnett Carriage Company.
John B. Scheibly, Wm. Spiegel, A. J. Hammer, McIlvain & Spiegel Company.
Jos. A. Jones, Rob't Jones & Co.
Geo. Puchta, Queen City Supply Company.
H. Tudor, M. J. Tudor, Chas. Edg. Tudor, the Tudor Boiler Mfg. Company.
J. L. Adams, Thos. Carruthers, J. L. Adams & Co.
Geo. Kinsey, Geo. Kinsey & Co.
E. T. Hannam, J. H. Bechtel, Hawley Down Draft Furnace Company.
Theo. Ballman, O. L. Wilson, Hoeflinghoff & Laue Foundry Company.

One of the subjects which was discussed at some length was the one relating to "Water Circulation in Internally Fired Boilers." In this, however, the discussion was of such an informal character as to render an intelligent report impossible. Another matter which was warmly handled was that of their grievances against the millmen for selling supplies direct to consumers over the heads of their regular customers, the boiler makers. Some pretty hot resolutions were adopted, which in due time, no doubt, will be read with great interest by the rolling mill people themselves; for the boiler makers did not appear to be passing them exclusively for the sake of whiling away time.

One of the local dailies which always leans to the sensational published one morning of the convention an article charging the object of the gathering to be chiefly the promotion of a gigantic combination. The facts of the case hardly corroborate the story, for while the subject was touched upon it was in a theoretical way only, and not even exhaustively at that. Some two years ago, when the craze for promoting trusts was at its height, some outside parties came to a number of boiler makers in different places and proposed a consolidation. They even secured options on a few plants. Who the capitalists were behind the movement was not known at the time, and the names of the promoters are now forgotten by all, or nearly all, of the manufacturers. In the discussion of the subject at this time there was but very little in favor of consolidation said. A few took the ground that a consolidation would be a good thing if the promoters would pay cash for such plants as their owners might want to sell with the object of retiring, but at this time there is said to be no sentiment of any weight toward the forming of what might be termed a trust.

There are now said to be about 400 boiler makers in this country, and of these only about 100 are enrolled as members of the association; however, there is a feeling among the trade that the association is gradually gaining ground, and in evidence of this are presented the names of the following new members which were admitted:

Western Boiler Works, Chas. Haffner, president, Chicago.
Northern Steam Boiler Works Company, South Bend, Ind.
M. Lier & Co., New Albany, Ind.
Hibben-Hill Boiler Works, South Chicago.
Illinois Steam Boiler Works, Chicago.
Wm. Drake, Springfield, Ill.
R. D. Cole Mfg. Company, M. F. Cole, secretary, Newnan, Ga.
Abendroth & Root Mfg. Company, New York City.
Erie City Iron Works, Geo. T. Bliss, secretary, Erie, Pa.
The Bromwell & Co. Works, Dayton, Ohio.
West Virginia Boiler Works, J. C. Shepherd, superintendent, Mannington, W. Va.

The Committee on Time and Place of Next Annual Convention reported in favor of Buffalo and left the exact date to be named later. A vote of richly deserved thanks was given to the local committee for the handsome manner in which they were entertained. The only feature to mar the programme was the fact that Friday afternoon and evening, which were given up to the trolley ride and banquet, were wet and cold—the only days of that character which Cincinnati has had this fall, by

the way. At Thursday morning's meeting the following officers were elected to serve through the year:

Richard Hammond of the Lake Erie Boiler Works, Buffalo, president.
J. D. Farasey of Cleveland, re-elected secretary.
Joseph Wrangler of St. Louis, treasurer.
J. Don Smith of Charleston, S. C., first vice-president.
M. S. Weidner of Chattanooga, second vice-president.
Clifford Tudor of Cincinnati, third vice-president.
James Morrison of Pittsburgh, fourth vice-president.
J. W. McAllenan of Peoria, Ill., fifth vice-president.

Probably there has been no previous convention which has fared so well as this one in the matter of social entertainment, and the members scattered to their homes after a very nice banquet at the Chester Park Club house with a very sincere regard for the capabilities of the local committee as entertainers.

The Champion Rivet Company of Cleveland had a display of their product at the hotel in charge of David J. Champion. The Chicago Pneumatic Tool Company were represented at the hotel by C. E. Walker of St. Louis. The Lunkenheimer Company of Cincinnati also had a display of their valves and steam fittings at the rooms where the convention held its sessions.

Strike Closes a Chicago Factory.

Labor troubles have led to the abandonment of the Siemens & Halske plant in Cicero, a suburb of Chicago. The General Electric Company, who for some months have operated the works, have decided to leave the place and remove the machinery and tools to their shops at Fort Wayne, Ind., and Schenectady, N. Y. The determination was arrived at six months since, when a strike occurred that occasioned a large loss to the company.

The last of the contracts on hand was finished last week, and on Saturday the men were notified of the intention to abandon the site. Five hundred men are thrown out of employment.

The determination of the General Electric Company to leave the site, which was originally that of the Grant Locomotive Works, is but the last of a series of disasters that have overtaken every project started there. The Grant Land Association, who originally purchased the tract, turned it over to the Grant Locomotive Works Company, who, after expenditures on buildings to the amount of \$1,300,000, failed with liabilities of \$500,000. The property was sold in 1895 to the Siemens & Halske Electric Company, and they, after expending \$2,000,000, quit the place. Later the tools, the Siemens & Halske patents, and machinery were sold to the General Electric Company and the buildings leased to them for two years.

It is asserted by the General Electric Company that a strike was on at the works while the sale was being negotiated, and that in order to complete the deal the Siemens & Halske Company compromised with their employees at a great sacrifice. When the General Electric Company took possession this condition of affairs was discovered, and on its being sought to be remedied another strike occurred.

"At that time," said Manager Bernard E. Sunny of the General Electric Company to a reporter, "the company had on hand contracts for 500 tons of castings for Milwaukee interests, besides contracts with Schenectady and Fort Wayne people. These contracts were for foundry work, which really the General Electric Company had no desire to handle, but only undertook because a large portion of the plant at Cicero consists of finely appointed foundries. As the strike occasioned the shutting down of the foundries and the loss of the contracts it was then determined that the plant was unsuitable for the business of the General Electric Company and plans were made to abandon it."

Mills Starting.—PITTSBURGH, September 26.—Two mills of the American Steel Hoop Company at Youngstown have already started to-day (Wednesday). The Brown-Bonnell Works and the Valley Works of the Republic Iron & Steel Company, at Youngstown, have also been started up. The Hazelton Works will probably continue idle indefinitely. The American Sheet Steel Company have started up their Struthers Works, at Struthers, Ohio, which have been idle for some time. The new Bessemer plant of the Republic Iron & Steel Company, at the Brown-Bonnell Works, Youngstown, will be started on Thursday, September 27. Leading officials of the company, and S. V. Huber, mechanical engineer, who designed the plant, will be present to witness the starting of operations.

The National Cable & Wire Company of Pittsburgh, with a capital of \$1,000,000, have purchased the Mower and Reaper Works of Latrobe, Pa., and will start the plant up at an early date in the manufacture of electrical supplies.

The Iron Age

New York, Thursday, September 27, 1900.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	ASSOCIATE EDITOR, CHICAGO
RICHARD R. WILLIAMS,	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	BUSINESS MANAGER.

General Business Conditions.

The crop season is now ended, and an account of the results can be taken. Up to a very recent date more or less uncertainty prevailed with regard to some very important crops. Drought, frost or some other blight is always a possibility until a crop has actually matured. The time has passed, however, when any serious damage is to be apprehended this season, and a definite conclusion can be reached relative to the results of agricultural operations in 1900. It can now be stated with entire safety that the crops have been abundant. The corn crop is immense, coming well up to the production in so-called "bumper" years. The yield of wheat is but little less than the average for ten years. The cotton crop is far from being a failure, although it may not be up to the mark of some recent memorable years. Oats, hay and minor farm products are sufficiently abundant for the country's requirements until another crop season yields its returns. Thus the great foundation of the country's prosperity has been well established for another year.

But agriculturists have been blessed not only with good crops—they are receiving higher prices than the average. The world's reserves have been heavily reduced in the past few years by shorter crops throughout the globe, and prices have therefore appreciated. Consequently our farming communities will receive for the crops of 1900 considerably more money than has usually been their experience.

Farmers may therefore be expected to be larger buyers and consumers of manufactured goods. They will purchase more luxuries. They will travel more freely. The railroads will not only be assured of the continuance of a large traffic from hauling agricultural products, but also of manufactured goods and passengers.

The prosperity of the farming interests, it is true, will not in itself make the entire country prosperous, but will certainly go a long way toward accomplishing that end. We all know too well the deplorable state of business during quite recent years, when agriculture suffered from such a serious depression. Crop failures and low prices formed a combination that was altogether disastrous. Hence the bright prospects for farmers this autumn should bring great satisfaction to business men generally. What is necessary, in order to realize the full benefit of the good condition of the farmers, is to disperse the few clouds now overhanging the business horizon. These clouds are mainly of a local character. In the East we have the anthracite coal miners' strike and some labor troubles of less consequence in connection with a few rolling mills. In the West are some quite important labor disputes yet unsettled in the rolling mills. In the nature of things these cannot long continue nor can their after effects be of permanent consequence, no matter what the result may be.

A matter of greater importance, because of its overshadowing the whole country, is the approaching Presidential election. This has an influence in checking enterprise, as the possibility of a change in the administra-

tion induces caution. The election is now not far distant, and the uncertainty will be ended in a few weeks. The presumption is strong that the result of the election will not be detrimental to business interests, and if this forecast proves true we should immediately afterward reap the benefit of the excellent harvests and of the postponed business. The remainder of the autumn and the winter should witness an active trade. In fact, despite the adverse influences with which business is now contending, we see evidences of a growing demand coming from channels of consumption whose requirements cannot be postponed. These evidences are the resumption of operations by manufacturing establishments that have been closed for months. They would not be started at this time if an immediate market for their output was not assured.

Needed Monetary Legislation.

Somewhat more discussion has been given to the question whether the gold standard law of March last could be evaded by persons hostile to its purposes than the practical value of the question would justify, and hardly enough attention has been paid to the need of additional legislation. If the gold standard had been already established so firmly that no attack could endanger it—and in a republic which frequently changes its law makers that would be impossible without a constitutional amendment—the reform of our financial legislation would still be incomplete. As the present law retains for the silver dollars their legal tender quality, and does not make all the obligations of the United States redeemable in gold, it may well be doubted whether the latest law on this subject gave the country all it ought to have and has a right to expect. It is a substantial gain on the previous condition of the law, and it may be effective under all the conditions that will occur, but there are other branches of the subject which require legislation.

The Government does not furnish the gold money of the country. The business community, through individual action, does that for itself. The man who has gold bullion sells it in that form or has it coined at his option, and the amount of gold money in the country depends not at all upon the idea that may prevail in Congress about the amount of it that ought to be in the country. Congress does not import or export or manufacture specie currency, except the small change and the silver dollars. The former is of less than its face value, to prevent its being melted or exported to the inconvenience of retail trade, the Government profiting by the margin or seignorage instead of allowing individuals to have it. The silver dollars are coined under a patch work of legislation, the result of years of agitation and compromise, which represents neither sound ideas of currency nor any cheap money theory.

The Government, however, issues a large part of the credit currency. As it no longer needs to borrow, the original excuse for this has ceased to exist. As it also allows credit currency to be issued by banks, it does not pretend that the issue of this form of currency is a prerogative of sovereignty. As Congress has not for many years changed the volume of its credit currency, it makes no pretense whatever of issuing it in response to commercial needs.

The public attention may well be fixed upon the needs of additional financial legislation, making all obligations payable in gold dollars, but also, and more especially, removing from the Government to credit institutions the issue of credit currency. This change it will evidently take a long time to effect. The politicians are afraid to

curtail the volume of "greenbacks;" but without touching this sensitive point, Congress might be induced to reform the bank currency law, modernizing it, making it scientific and providing for the increase and decrease of currency as the conditions of business require. An elastic bank currency has been attained elsewhere and can be attained here, and with the reform of bank currency, and especially its expansion in proportion to the volume of business and the amount of bank capital, the popular unwillingness to have the Government paper money gradually retired would abate. The country will do well, then, to fix its attention less on the efficacy of what has been done than on the need of completing the financial reform, eliminating the Government paper, which is a constant source of danger, and enabling the business community to supply itself with credit currency, as it already supplies itself with specie.

American Manufactures in Canadian Markets.

Canadian economists and statesmen are just now very much troubled by the fact that the fiscal policy of the Dominion, though designed to discourage trade with the United States and foster intimate and mutually profitable relations with Great Britain, has signally failed to attain the object sought. While the volume and value of imports from Great Britain have increased during the past three years, the gain in imports from the United States has been very much greater. It is scarcely probable that an advantage in duties of $12\frac{1}{2}$ to 33-1-3 per cent. in favor of Great Britain as against the United States has not been of advantage to British manufacturers, but such advantage is not great enough to offset the influence of close proximity to this country, or to neutralize the forces tending to Americanize the tastes, habits and business methods of the people of the narrow strip of British North America along our northern border, which constitutes pretty much all of Canada that is not a wilderness. Those who have had occasion to be much in Canada during the past few years have noticed that the people of the provinces are becoming more and more like those of our Northern States, and that the influence of American example is much more powerful than local pride and patriotism will permit the Canadians to admit. Time was when to cross the border meant to come under rules and regulations as distinctly foreign to American experience as one would encounter in mid-England. This is no longer so. Canadian railroads are now so like American railroads that to cross the border would attract no attention but for the perfunctory customs examination of hand luggage. One also notices the gradual progress of what, for want of a better term, may be called the Americanization of Canadian cities. In their trolley cars, their stores, their modern residence streets and their newspapers, they are conforming more and more closely to the standards which obtain south of the St. Lawrence. In the homes of the people we also see the influence of "Yankee" customs and habits. In construction, furnishings and appointments they are more like the homes of Boston or New York than like those of London or Manchester. Unconsciously, no doubt, but steadily and even rapidly, Canada is developing along the lines which, in this country, have differentiated our civilization from that of Europe. Their methods have insensibly, but naturally, conformed to ours; their wants, in many important lines, are better supplied by the products of our mills and factories than by those of Great Britain. It need occasion no surprise, therefore, that in spite of a governmental financial policy designed to hamper it, Canadian trade with the United States is steadily growing,

as appears from the following table, in which the annual increase or decrease in the 20 leading items of exports from the United States during the three fiscal years is shown:

	1898.	1899.	1900.
Steel rails.....	\$1,555,405	\$1,720,503	\$2,882,667
Cotton manufactures.....	2,465,630	2,759,164	2,668,906
Agricultural implements.....	781,415	1,521,054	2,006,943
Books, maps and prints.....	722,049	844,410	1,012,986
Illuminating oil.....	737,389	762,624	1,012,441
Leather.....	878,054	821,530	952,846
Builders' hardware.....	719,326	906,047	818,917
Carriages.....	183,233	582,004	544,465
Clocks and watches.....	349,198	410,237	433,635
Boots and shoes.....	285,054	427,023	413,487
Furniture.....	523,424	439,536	394,328
Bicycles.....	614,003	582,500	387,767
Turpentine.....	207,600	230,758	332,069
Telegraph, telephone and scientific instruments.....	305,016	429,734	276,777
Copper and manufactures.....	155,215	146,635	226,356
Sewing machines.....	141,172	163,095	193,920
Fertilizers.....	93,470	131,587	155,230
Rosin, tar, &c.....	111,482	132,190	141,637
Cotton seed oil.....	115,648	111,517	126,010
Tobacco manufactures.....	62,139	82,841	117,280

The value of the dutiable articles imported into Canada during the fiscal year ended with June, 1900, was over \$44,000,000, while that of articles imported from Great Britain was \$28,000,000. This shows very conclusively that for Canadian markets certain lines of our manufactures are better adapted than those of the mother country. Such a condition is the outgrowth of causes not likely to be changed, nor, indeed, much influenced, by a fiscal policy favoring trade with Great Britain. Of dutiable and undutiable merchandise together, the value of the Canadian imports from the United States during the fiscal year 1899-1900, was \$97,041,722, against \$89,570,458 in 1898-'99, and \$84,889,819 in 1897-'98.

There is no reason why these figures should disquiet the Canadian economists. They are the inevitable result of a tendency on the part of the people of the Dominion to waive sentiment in matters which directly affect their material interests. This country is a better and more convenient market in which to buy than England offers, and in many important lines our goods better suit the people. Canadian manufacturers follow American rather than English styles and patterns, and in plant and processes our practice is closely followed. The effort to keep alive the colonial feeling is becoming more and more difficult, since, while in no sense restive under a political system which identifies them with the British Empire, the people of Canada recognize that the chief and, indeed, only advantage in this relation is that it gives a better guarantee of continued independence than they could have if wholly severed from the mother country. But it would now be difficult to find among the people of Canada the kind of loyalty to Great Britain which would warrant a sacrifice of the commercial advantages of near neighborhood to the United States. The growing dissimilarity between the principal lines of Canadian imports from Great Britain and the United States is tending to neutralize, so far as this country is concerned, the advantages enjoyed by England in preferential duties. The highest items of British export to the Dominion are worsted and woolen cloths, clothing, cotton goods, tin plates, spirits, earthen ware, carpets, linen goods, haberdashery and millinery. Our principal lines of exports will be seen from the table printed above.

The first fall meeting of the Engineers' Society of Western Pennsylvania was held in Pittsburgh on Tuesday evening, September 18. W. E. Snyder of the Shoenberger Works of the American Steel & Wire Company, read a paper on "Blowing Engines for Blast Furnaces."

The Verein Deutscher Ingenieure has begun work on an international technical dictionary. At the last general meeting at Cologne an appropriation of 5000 marks was made for 1901 to defray preliminary work.

Business in the Naugatuck Valley.

It is most natural to suppose that at this time business in the Naugatuck Valley is not booming. The brass industry is, in fact, a little quiet just at this time. Most of the great mills are averaging about five days' work each week, while others are contented with four days of full operation. Certain departments are more and others less fortunate in this respect, but summing up all things an estimate of five days per week is a fair one. The tubing business is fairly active, and the mill which makes a specialty of this line is kept pretty busy in supplying the orders, but is not rushed.

The sheet business in both brass and copper is said to have fallen off considerably, as has the wire business also. As these two lines are the principal ones, it will be seen that the majority of the mills are adversely affected. Copper wire is experiencing a good demand from the West, but business in the Eastern States is very quiet. Novelty work is also slow. Regarding condenser tubes, there is no sign of especial activity, but at the same time no falling off is to be noticed.

Despite the fact that none of the plants are running up to their full capacity, there is a good deal of building going on in the valley. All of the big mills are adding at least to a slight degree. Two of the mills are building quite extensively. At the various novelty shops in Waterbury additions have been going on throughout the whole summer, and the end is not yet in sight. The most pretentious extensions are going on at the works of the Scovill Mfg. Company of Waterbury, Conn. They are now completing work on a large new boiler plant and electric generating station. The plant, when completed, will serve as a central steam station, supplying all of the rolling mill engines throughout the works. The electric station will generate current whereby all of the manufacturing buildings will be operated. In other words, when this work is completed the Scovill Company will drive all of their machinery with the exception of the mills with electricity. The plant is a most modern one, embodying all latest appliances. Westinghouse, Church, Kerr & Co. of New York are doing the work of installation. This company are also erecting a large new rolling mill, which will be up to date and economical in its arrangement and equipment. They are also arranging for the erection of a five-story manufacturing building, in which brass novelties will be made. This building will have a floor space of 90,000 square feet. It has been rumored that the Scovill Mfg. Company intend going into the manufacture of spoons, but we are unable to obtain any confirmation to the report. That the matter has been under advisement is evident. It is said that they have recently been purchasing considerable property on East Main street adjoining their works, and that still further improvements are contemplated.

At Thomaston additions are being built to the works of Plume & Atwood, which will increase the capacity of their rolling mills at least 50 per cent. The work is well under way, and the new mills will doubtless be counted among the producers before the coming winter is far spent.

The new mill of the Waterbury Mfg. Company is now running in good shape, supplying all of the material needed by that company. The fact that the interests of this company and those of the Waterbury Clock Company are so closely linked gives rise to the opinion that the latter company will soon draw their supply of raw material from the new mill of the Waterbury Mfg. Company. The Waterbury Clock Company have just finished a very large five-story addition, and are now building another quite as large at another portion of the works.

Extensive improvements have just been made by the Steele & Johnson Mfg. Company, the Waterbury Button Company and the Waterbury Buckle Company. Each of these companies are large manufacturers of stamped metal goods.

Randolph & Clowes of Waterbury, Conn., are getting out a new line of seamless drawn copper work in connection with automobile work. The work consists of gasoline and air tanks, and mufflers for the gasoline vehicles and boiler shells for the steam carriages.

The Dissolution of the Brass Association.

One of the most interesting items in connection with the brass industry is the dissolution of the "Brass Association." All of the large manufacturers of brass in this country were members of this association. It will no longer be operated after October 1. For several years this organization has maintained harmony among the great brass interests throughout the country. It was a means of pooling the interests to maintain prices. One of the prime factors in the brass trade sanctioned the following statement: "From the time of its organization the association has been a success, and everybody in the association was making money when it was de-

cided to dissolve. There are two reasons for this action: first, that certain outside mills are being built with plenty of capital, and this means great competition. Then there are internal dissensions in the organization itself, in reference to its policy. Soon after its organization prices became lower, and the price of brass to-day is 10 per cent. less, considering the advance in raw material, than at the time of the organization of the association. After the first of the month each manufacturer will go it alone and regulate his own prices and output. The competition will be so strong that undoubtedly brass prices will go still lower."

It will thus be seen that the last band which held the manufacturers of brass together has been broken. That keen competition will follow is not to be doubted. While four of the largest companies are now bound together in the American Brass Company, the strength which is being accumulated by the large outside forces in the way of adding to their plants is an evidence of the fact that a strong effort will be made by each concern for business. The economies which can be practiced by the American Brass Company in the way of pooling their purchases of copper, &c., and apportioning the work among the various mills will afford an opportunity to lower prices considerably, if desired, and of course the outside companies must arrange to meet them. The trade look upon the course which recent events have shaped as an extremely good one for the consumer.

It is said that at present there is little activity in the exportation of brass goods. It is also thought, however, that competition will soon force prices low enough to place the American producers in a good position for a share of the trade of European and other foreign countries.

Owing to the strength with which copper has been held by the producers, the brass manufacturers of the Naugatuck Valley have been very cautious in laying in their supplies of copper. They have purchased only as much as was absolutely necessary to keep the mills supplied. This is the policy which they still pursue. It is said that while the copper producers claim to have none of the metal for immediate delivery, they are perfectly willing, if not anxious, to sell future copper. It is thought that the copper situation still hinges heavily upon the condition of European consumption.

The mills seem to be well supplied with spelter, having purchased heavily some time ago. The operators voice the opinion that this metal is a little high priced now.

MANUFACTURING.

Iron and Steel.

Work was commenced about two weeks ago on the new plant of the Cambridge Rolling Mill Company, at Cambridge, Ohio, and is being pushed with a large force of men. We are advised that the new company expect to employ 200 to 250 men, and have a daily output of 100 to 150 tons of finished steel. It is expected to have the plant ready for operation about January 1, 1901. The product of the concern will be finished material exclusively, consisting of steel bars, rods, angles, tees, zees, light structural material, agricultural shapes and specialties in steel and iron. The officials of the concern are L. L. R. Davidson, president; W. J. Gillespie, vice-president; C. S. Sheppard, treasurer; Lakin C. Taylor, secretary, and Joseph W. Hilton, superintendent.

The jacket of Fulton Furnace of the Globe Iron Company, at Jackson, Ohio, gave way recently, and the claim is made that this stack has the longest blast on record in the Southern Ohio iron field. The stack was put in blast September 28, 1894, the blast lasting 5 years, 11 months and five days. We are advised by the Globe Iron Company that the jacket of the furnace was over 35 years old, and was quite unlin and rotten and had given trouble for several years. The concern state that they could probably have patched it up and gone ahead, but had an entire new furnace of about three times the capacity of the old one nearly completed alongside the old stack, and as the old furnace had to be removed before the new one could be blown in the firm decided not to patch the old jacket. It is stated the linings of the old furnace were apparently good for a year or two longer.

Last week the American Tin Plate Company started up a number of hot mills in their various plants in the West, and it is expected that within a week nearly all the mills of this concern will be in operation. It is desired to accumulate a stock of black plate, so that when the tinning departments are started steady operation can be assured.

One of the two new furnaces being built by the Marting Iron & Steel Company, at Columbus, Ohio, is nearly completed, and will probably be put in blast inside of 30 days. Walter Kennedy of Pittsburgh is consulting engineer in the building of these two furnaces.

There has recently been a change among officials of the Atlantic Tube Company, with offices in the Park Building, Pitts-

burgh, and plant at Beaver Falls, Pa. Geo. H. Baxter, formerly of the Allegheny County Light Company, has been made president to succeed A. G. Wasson. Other changes among minor officials have been made. Offices of the concern will be removed from Park Building to Second National Bank Building. The office of secretary yet remains to be filled. It is probable some important changes and additions to equipment of this plant will be made.

The Carnegie Steel Company are purchasing additional land in Homestead to be used for railroad yards. It is probable the Councils of Homestead will be asked to vacate several streets to be used by the firm for the same purpose.

The puddlers employed by the Eleanor Iron Company, at Hollidaysburg, Pa., decided on Saturday, September 15, to accept \$4 per ton for puddling, the price offered by the company and refused by the men last May, since which time the plant has been closed down. Work in the puddling department was resumed on Monday, September 24, and the finishing mills will be started up some time next week. The mill manufactures high grade muck iron, merchant iron and skelp.

The report that a strike had occurred in the puddling mill of the American Car & Foundry Company, at Berwick, Pa., is untrue. Owing to a slight change in rules some of the men stopped work, but went back again in a few hours. The plant is now in full operation.

We are officially advised that the report that the Lorain Steel Company, at Lorain, Ohio, would start up their two idle blast furnaces at that place is untrue. There is no intention of starting these two stacks for some time.

We have been officially advised by James Lord, general manager of the American Iron & Steel Mfg. Company, at Lebanon, Pa., that that company have purchased a tract of 21 acres on Neville Island, Pittsburgh, for the purpose of erecting a plant for the manufacture of machinery and carriage bolts, and all articles in iron and steel, such as they are making now. There is no intention of moving the Reading and Lebanon plants to Neville Island. Plans in regard to present works are not affected by the new purchase. The American Iron & Steel Mfg. Company are proprietors and operators of plants formerly owned by the Pennsylvania Bolt & Nut Company, J. H. Sternbergh & Son, National Bolt, Nut & Rivet Works, Lebanon Iron Company and East Lebanon Iron Company.

At Youngstown, Ohio, petitions have been filed for the dissolution of the Struthers Iron & Steel Company and the Mahoning Valley Iron Company, the former having been taken over by the American Sheet Steel Company and the latter by the Republic Iron & Steel Company. A referee was appointed to take testimony in both cases.

The Scottdale Works of the American Sheet Steel Company, at Scottdale, Pa., which have been idle for some little time, started up in full on Monday, September 24.

At Pittsburgh, in the case of Geo. T. Lewis vs. Morehead Brothers & Co., makers of iron and steel skelp in that city, a verdict was given for the plaintiff for \$7500. The action was to recover for work done for the defendant company.

The finishing department of the Palmer Steel & Iron Company's merchant bar mill, at Muncie, Ind., was burned on Sunday evening, the remainder of the plant being uninjured.

Machinery.

The Goodman Mfg. Company, Chicago, are making arrangements for the erection of a factory of their own. For some months they have been using a portion of the plant of the Link-Belt Machinery Company, at Thirty-ninth street and Stewart avenue, manufacturing coal mining machinery, including motors. As the Link-Belt Company need the room for their own growing business, the Goodman Company have purchased a tract of about 2 acres at Halsted street and Forty-eighth court, on which they expect to have a plant ready for operation in about 60 days. The main building will be 100 x 250 feet, partly two stories and partly one story high. A separate structure will be used for blacksmith shop and boiler and engine room. The site is excellently located for railroad facilities.

The Muncie Foundry & Machine Company, Muncie, Ind., have begun the manufacture of glass blowing machines on an extensive scale. Special machinery, which can be used only in making many of the intricate parts of the new machine, has been placed in the works. The success of the new machine for blowing glass seems assured. Recently 25 glass blowing machines manufactured by the company have been shipped to New York, to be used in glass factories.

The International Power Company, operating the Rhode Island Locomotive Works and the Corliss Steam Engine Works, Providence, R. I., have decided to add to the locomotive works a factory for the manufacture of automobiles, both of the electric and superheated water type. This announcement was authorized recently by Joseph H. Hoadley of New York, president of the company, who, with the chairman of the Board of Directors, Joseph Leiter of Chicago, arrived in Providence recently, and since that time have been busy considering the proposed enlargement of the works. The company have authorized the expenditure of \$200,000 for this new enterprise, and under the terms of contract already entered into ground will be broken

for the new automobile factory at once. Plans are also under consideration for an important addition to the Corliss works, where it is proposed to manufacture a standard auto-truck calculated to carry 10 tons of freight and move 4 miles an hour. The company are also considering the advisability of reopening their Worcester works for the manufacture of automobiles.

The Ideal Foundry Company of Girard, Ohio, are negotiating for the removal of their plant to Youngstown, Ohio.

At Pittsburgh the Pennsylvania Title & Trust Company have been appointed receivers for the Union Boiler Tube Cleaner Company of that city.

The Bowler Foundry Company of Cleveland, Ohio, have been incorporated, with a capital of \$50,000, by N. P. Bowler, John G. White and others.

The Frost Mfg. Company, Galesburg, Ill., builders of boilers, engines, clay working machinery and gasoline engines, will in a very short time occupy the new plant, whose buildings are now nearing completion. Their present works are located in the heart of Galesburg, whereas the new plant, which is 9 acres in area, is located in the outskirts of the city, on line of the C., B. & Q. R. R. The buildings are substantially constructed with heavy brick walls and the roofs covered with Ludovici roofing tile, so that it does not seem possible to have a conflagration start from the outside. The buildings are seven in number, exclusive of a detached two-story office building. The plant will be heated through a hot air ventilating system, for which the contract at the time of our visit had not yet been let. Hydraulic machinery has been installed in the boiler shop, equipment for which was furnished by W. H. Wood, Media, Pa. This latter company also furnished all of the traveling cranes which are operated by hand. A 10-ton crane car, operated by a Frost gasoline engine, has been furnished by the Cleveland Crane & Car Company. They will locate at points convenient to all large tools in boiler and machine shops, jib cranes and pneumatic air hoists, part of which will be furnished by Curtis & Co. Mfg. Company, St. Louis.

O. H. Michaelson, Charleston, W. Va., is installing a steam and electric lighting plant at Lewisburg, W. Va., for the Lewisburg Milling & Electric Light Company.

The Wilmarth & Morman Mfg. Company have already located their new factory in Grand Rapids, Mich., to which place they will move October 1. This was their full intention at the time they purchased the entire business of the manufacture of the New Yankee drill grinder last spring. They will there enjoy greater facilities for manufacturing, and will extend the business considerably by adding new styles to their already extensive line of drill grinders. They have during the past summer enjoyed a good trade with foreign countries.

The Bridgeport Safety Emery Wheel Company, Bridgeport, Conn., manufacturers of emery grinding machinery, have leased the property adjoining their factory and will use it in addition to their former plant. The addition is 120 x 30 feet, with an L 45 x 120 feet, and is two stories high. The front of their factory now extends from 82 to 96 Knowlton street.

The Lloyd Booth Company, Youngstown, Ohio, manufacturers of rolling mill and steel works machinery of all kinds, and sand and chilled rolls, have taken contracts from the National Steel Company, Ohio, Works, Youngstown, for one Morgan Construction Company eight-stand 14-inch continuous billet mill, and tables to handle material between their present 23-inch billet mill and new 14-inch continuous billet mill. Also shear tables for same.

Wm. Todd & Co., engineers, founders and machinists, Youngstown, Ohio, have received an order from the Sharon Steel Hoop Company, Sharon, Pa., for four tandem compound rolling mill engines, ranging from 300 to 600 horse-power. The concern have also received this month from the Republic Iron & Steel Company an order for a tandem compound rolling mill engine of 3500 horse-power. This is to drive a continuous billet mill at the Bessemer plant at the Brown-Bonnell Works in Youngstown. Wm. Todd & Co. have also sold for export two vertical cross compound blowing engines, with steam cylinders, 42 x 80 inches in diameter, air cylinders 84 inches in diameter and 5-foot stroke.

Hardware.

The Ludlow-Saylor Wire Company, St. Louis, have in hand some artistic work in their art metal department. Brass and bronze railings of original design are being made for a bank in Mexico and the First National Bank of Dubuque, Iowa, and a pair of bronze gates for a mausoleum in Rochester, N. Y. Some heavy wrought iron work is also under way for a Government building in Dubuque. This company have lately increased their wire weaving capacity very materially by the construction of a new factory building and the installment of additional machinery.

C. P. Moore, Ravenswood, W. Va., reports a very satisfactory demand for his Perfect shelf boxes from all parts of the country. Within a few days he has sent a shipment to Cuba, this being the second shipment to the same party in two months.

The H. H. Brown Mfg. Company, Decatur, Ill., are securing a seasonable trade in Newton's cattle dehorner and other specialties of which they are the manufacturers. They also have a large foreign trade in dehorners and are making frequent shipments abroad.

The Iron and Metal Trades.

In some respects the week has been eventful, although some doubt is expressed whether developments are such as to strengthen the markets.

The settlement of the boiling scale in the West, under the pressure of circumstances, will gradually start the mills in that territory. It looks as though the men had the better of the bargain. Comparing wages under the new scale with those paid for the scale year 1898-1899, when prices were close to those now ruling, the men have secured an advance of 16 per cent. Quite a number of mills are now at work under accumulated orders, and others will begin as specifications come in. Some consumers seem to be under the impression that the resumption will mean a weaker market, but this does not seem likely in view of the fact that only the best equipped mills will be put in operation for the present.

So far as the Iron trade at large is concerned, the reduction in the price of standard sections of Steel Rails from \$35 to \$26 at mill, now in effect, will depend upon developments. If, as is claimed by many, the new price is too high to induce buying on any large scale, then the effect will be unfavorable. A large rail tonnage means that the great mills have their capacity well engaged, and thus exert less pressure upon Steel Billets and upon the finished lines in which they are interested. At times when the capacity of the ore mines and of the coke ovens is not being strained—and we are passing through such a time now—a large Rail business does not necessarily mean dearer raw material. It is yet too early to judge what the attitude of the railroads will be. If they order only what is absolutely necessary the Rail tonnage will be disappointing. They have certainly not come in with a rush during the last few days, nor is there apparently any reason why they should, even though, as intimated, the \$26 rate is good only for 30 days.

It is claimed that the Rail shipments during the current year have been so light that the roads must buy for 1901. It appears that the shipments of Standard Sections this year will run about 1,200,000 tons, as compared with about 2,000,000 tons in 1899, in the closing months of which, however, a considerable tonnage was rolled on 1900 account. The difference between the heavy requirements in a year when Rails are very low and in a year when they cost much more is therefore a little exaggerated. But, even taking this into account, the figures illustrate how important a factor the fluctuations in the requirements of Steel Rails are to the trade at large.

Under the circumstances, the effect of the effort to secure \$26 per ton at mill for Standard Sections will be watched by the Iron trade at large closely. The next two or three weeks should tell whether the figure determined upon will cut down the sales as seriously as many seem to believe.

Pig Iron is still dragging somewhat. From the South come reports that at least one interest has made lower prices than have been ruling thus far. The Southern railroads have reduced freight rates 50 cents per ton on shipments to the Ohio River and to tidewater for domestic trade, to go into effect on October 1. To what extent connecting lines will lower prices north of the Ohio River is not yet known. The rate of freight on export sales has remained unchanged.

In Pittsburgh moderate sales of Bessemer Pig have been made at \$13.50, and Eastern furnaces have taken an order for 10,000 tons of Low Phosphorus Bessemer for delivery in Western Pennsylvania.

The export movement is rather light, owing to high freights. The heavy offerings of Steel seem to have had their effect in Great Britain, where Billets are now down to £5, delivered. With ocean freights at 20 shillings and upward for the full months, the margin is narrowing seriously.

In the metal trade the most interesting event has been the lowering of the price of Tin Plate to \$4 at mill per box, to become effective on October 1. The great Spelter consolidation is in abeyance for the present.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Sept. 26, 1900.	Sept. 19, 1900.	Sept. 29, 1900.	Sept. 27, 1899.
PIG IRON:				
Foundry Pig, No. 2, Standard, Phila				
Foundry Pig, No. 2, Southern, Cin	\$15.50	\$15.50	\$16.00	\$22.50
Foundry Pig, No. 2, Local, Chicago	13.25	13.75	13.75	20.25
Bessemer Pig, Pittsburgh	14.50	15.50	15.50	25.00
Gray Forge, Pittsburgh	13.50	14.00	15.00	23.50
Lake Superior Charcoal, Chicago...	13.00	13.00	14.00	21.50
	18.00	18.50	19.00	25.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	16.50	16.75	18.00	30.00
Steel Billets, Philadelphia	19.25	19.25	20.00	...
Steel Billets, Chicago	19.50		20.00	...
Wire Rods, Pittsburgh	35.00	35.00	35.50	44.00
Steel Rails, Heavy, Eastern Mill	36.00	30.00	35.00	33.00
Spikes, Tidewater	1.40	1.50	1.80	2.60
Splice Bars, Tidewater	1.25	1.35	1.50	2.15
OLD MATERIAL:				
O. Steel Rails, Chicago	10.00	9.50	9.50	19.00
O. Steel Rails, Philadelphia	12.75	12.75	12.50	21.50
O. Iron Rails, Chicago	13.50	12.50	12.50	28.00
O. Iron Rails, Philadelphia	15.50	15.50	14.00	25.00
O. Car Wheels, Chicago	16.00	15.00	15.00	19.00
O. Car Wheels, Philadelphia	16.00	16.00	17.00	20.00
Heavy Steel Scrap, Chicago	10.00	9.00	9.00	18.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.95	1.25	1.30	2.10
Common Iron Bars, Youngstown	1.25	1.25	1.30	2.25
Steel Bars, Tidewater	1.20	1.20	1.25	2.40
Steel Bars, Pittsburgh	1.15	1.15	1.10	2.50
Tank Plates, Tidewater	1.25	1.25	1.30	3.00
Tank Plates, Pittsburgh	1.10	1.10	1.10	2.20
Beams, Tidewater	1.65	1.65	1.65	2.40
Beams, Pittsburgh	1.50	1.50	1.50	2.25
Angles, Tidewater	1.55	1.55	1.55	2.40
Angles, Pittsburgh	1.40	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh	1.40	1.40	1.35	2.25
Skelp, Sheared Iron, Pittsburgh	1.50	1.50	1.50	2.50
Sheets, No. 27, Chicago	3.05	3.05	3.05	3.20
Sheets, No. 27, Pittsburgh	2.80	2.80	2.80	3.15
Barb Wire, f.o.b. Pittsburgh	2.80	2.80	2.80	3.40
Wire Nails, f.o.b. Pittsburgh	2.30	2.20	2.20	2.80
Cut Nails, Mill	1.95	1.95	1.95	2.50
METALS:				
Copper, New York	16.75	16.75	16.75	18.37½
Spelter, St. Louis	3.98	3.95	3.97½	5.35
Lead, New York	4.37½	4.37½	4.32½	4.60
Lead, St. Louis	4.37½	4.32½	4.32½	4.50
Tin, New York	28.80	28.60	29.75	32.85
Antimony, Hallett, New York	9.50	9.50	9.50	9.75
Nickel, New York	55.00	55.00	55.00	36.00
Tin Plate, Domestic Bessemer, 100 lbs., New York	4.19	4.84	4.84	4.82½

Chicago. (By Telegraph.)

Office of The Iron Age, 1205 Fisher Building, (CHICAGO, September 26, 1900.)

Encouraging features predominate in the Western Iron trade. The volume of business is unquestionably increasing. Some buyers show quite a fearless disposition, evidently being confident that the result of the approaching election will not be unfavorable to commercial or manufacturing interests. Nevertheless, a great deal of trade is postponed until the political situation becomes clearer. The settlement of the Amalgamated scale of wages for the coming year amicably has removed a troublesome question from the business situation, and all concerned are greatly pleased with the outcome. Prices continue to show some irregularity, but the general tendency is toward a firmer basis of values.

Pig Iron.—The reduction of 50c. per ton on the freight rate on Iron from the South to the Ohio River, effective October 1, will probably cause some readjustment of prices. Sellers of Southern Iron had been at a disadvantage in reaching this locality, but they have recently been taking considerably more business, based on the reduction in freight rates. The schedule has not as yet been announced, and it is not known just what rates will apply to the various Northern points, but it is expected that the reduction will be uniform. Quotations on Southern Iron are continued for the present at the old rates, for the reason that sharp demand exists for small lots for quick delivery, which, of course, will take old freight rates until the end of the month. The volume of business for the week has been quite large, but was made up mainly of orders for small lots. The largest order taken so far as is known called for 2000 tons. Quite a number of orders ranged from 200 to 1000 tons. The business now coming up is well distributed throughout the various consuming interests. Some of the implement manufacturers are buying for deliveries through the next 60 to 90 days. Most buyers, however, are purchasing conservatively, not being disposed to buy heavily until after the election. The largest foundries are covering their requirements for 30 days, and the smaller ones for one or two weeks. The Iroquois Furnace is now the only furnace in this district running on Foundry Iron. The other local producers have good stocks on hand and do

not expect to resume operations until these stocks are considerably reduced. The consumption appears to be steadily growing, however, and barring unfavorable developments it will not be long until the necessity appears for increasing the supply. Some of the largest consumers, notably the Malleable foundries, have purchased quite lightly and are expected to enter the market at almost any time. The Malleable foundrymen will require a heavy tonnage to meet their necessities for the coming winter. Prices are inclined to weakness, but manufacturers claim that they cannot go much lower, as they are now close to cost at present prices of materials. Quotations are as follows:

Lake Superior Charcoal.....	\$18.00 to \$18.50
Local Coke Foundry, No. 1.....	15.00 to 16.00
Local Coke Foundry, No. 2.....	14.50 to 15.00
Local Coke Foundry, No. 3.....	14.00 to 14.50
Local Scotch, No. 1.....	15.00 to 16.00
Ohio Strong Softeners, No. 1.....	16.50 to 18.00
Southern Silvery, according to Silicon.....	17.85 to 18.35
Southern Coke, No. 1.....	16.35 to 16.85
Southern Coke, No. 2.....	15.35 to 15.85
Southern Coke, No. 3.....	14.85 to 15.35
Southern Coke, No. 1 Soft.....	16.35 to 16.85
Southern Coke, No. 2 Soft.....	15.35 to 15.85
Foundry Forge.....	14.35 to 14.85
Gray Forge and Mottled.....	13.85 to 14.35
Southern Charcoal Softeners, according to Silicon.....	17.85 to 18.35
Alabama and Georgia Car Wheel.....	20.85 to 21.85
Malleable Bessemer.....	15.50 to 16.50
Standard Bessemer.....	15.50 to 16.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	18.00 to 19.00

Bars.—The Republic Iron & Steel Company are now taking business, the wage scale having been settled by the agreement reached at Cincinnati early Sunday morning. The resumption of operations by this company has been received with great satisfaction by consumers of Bar Iron, who had become anxious over the possibility of a scarcity. The mills of the Republic Iron & Steel Company have now been closed for practically three months. This has cut down their Bar Iron output of this year fully 25 per cent., and thus so heavily reduced the supply that manufacturers and consumers alike do not expect the market to be overstocked for at least several months. The mills in this vicinity are preparing to resume operations, and will get to work as speedily as possible. Mill shipments of Bar Iron are quoted at 1.40c., with possibly a slight concession on desirable orders. The situation in Steel Bars is satisfactory from the standpoint of the manufacturer. The large mills are sold up almost to their full capacities for months to come. Some small mills are still in a position to take business and are quoting 1.30c., Chicago, but the larger manufacturers are firmly maintaining quotations at 1.35c. to 1.40c. The volume of business in both Bar Iron and Bar Steel has been quite large during the week, but orders were seldom for lots running over 200 tons. The Hoop trade has been fair, but heavy consumers are deferring the placing of additional contracts until after the election. Mill shipments are quoted at about 1.95c., base, Chicago. Jobbers have had a large trade from store, because of the difficulty in securing mill shipments as promptly as desired. Store quotations are maintained at 1.65c. to 1.75c. for Common Iron; 1.50c. to 1.65c. for Steel, and 2c. to 2.25c. for Hoops.

Structural Material.—The local demand from the building trade is now taking small quantities only, and the week's business has not been very heavy. Milwaukee has latterly been a much better market than Chicago. The building trade in the former city has been considerably more active. The demand for bridge work is excellent, the bridge companies having recently secured orders which will carry them well through the winter. Quotations, mill shipments, are as follows: Beams, Channels and Zees, 15 inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.35c.; Tees, 1.70c.; Universal Plates, 1.35c. From local yards small lots of Beams and Channels quoted 2.15c. to 2.35c.; Angles, 1.80c. to 1.90c. rates, and Tees, 2c. to 2.20c.

Plates.—A better demand is reported both for mill shipments and from store. Notwithstanding the improvement in trade, prices are irregular. Some of the manufacturers are making attractive rates on orders covering considerable tonnage. Small lots, however, are being maintained at the basis of last quotations—viz., 1.30c. to 1.35c. for Tank Plates from mill and 1.50c. to 1.60c. for Flange. Jobbers quote Tank from store at 1.55c. to 1.65c. and Flange, 1.90c. to 2c.

Merchant Pipe.—The demand is only of a moderate character and is likely to continue so until the stocks purchased in August have been more nearly exhausted. Prices are unchanged. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than carloads.
¾ to ½ inch and 11 to 12 inches.....	59.2 46.2	54.9 40.9
¾ to 10 inches.....	68.7 53.9	61.9 48.9

Sheets.—Manufacturing consumers have recently been much better customers of the mills than jobbers. The latter are not disposed to place orders for their future requirements until after the election, although their necessities compel them to purchase from one another. The demand from manufacturing consumers has been very good, and some large orders have recently been secured for both Black and Galvanized Sheets. Mill shipments of No. 27 Black Sheets are quoted at 3.05c., Chicago, and Galvanized at 70 and 15 off. From store Common No. 27 is quoted at 3.10c. to 3.15c.; Nos. 10 to 14, 1.80c. to 2c., and No. 16, 2.10c. to 2.20c. Galvanized is 70 and 5 to 70 and 10.

Merchant Steel.—The implement trade, upon which this branch of business has been relying for some little time, has now about ended, practically all the implement makers having covered their season's wants. The miscellaneous trade is disposed to be conservative, and no considerable movement is expected in this way until after election. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.70c. to 1.90c.; Smooth Finished Tire, 1.75c. to 1.95c.; Open Hearth Spring Steel, 2.15c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.70c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c. Crucible Tool Steel is somewhat irregular, ordinary grades being quotable at 6c. to 7½c.; Specials are still 13c., upward.

Rails and Track Supplies.—The manufacturers at their New York meeting decided to make \$26, Chicago, the rate for the present for Standard Sections of Steel Rails for next year's delivery. It is understood that this rate has only been named for 30 days. Manufacturers are confident that they will be able to advance this price, believing that next year's Rail requirements will again be very heavy. No sales are reported, but inquiries for a large tonnage are in hand, made up of moderate sized quantities, coming from the smaller railroad systems. Light rails are quoted at \$25 to \$28, and the demand is fair. Track Supplies are quoted as follows: Splice Bars, 1.35c. to 1.40c.; Spikes, 1.70c. to 1.80c.; Bolts, with Hexagon Nuts, 2.10c. to 2.20c.; Square Nuts, 2c. to 2.10c.

Coke.—An enormous business is now being done by agents for Connellsville and West Virginia Coke. Foundrymen are increasing their purchases for fear that the Anthracite strike may cause a diversion of Coke to take the place of Anthracite with Eastern consumers. Some negotiations are in hand for very large tonnages. Quotations for 72-hour Foundry Coke are \$4.50 to \$4.75, Chicago.

Cast Iron Pipe.—The Cast Iron Pipe trade has improved very considerably in the past few weeks. Prices have been reduced from their high point, so that buyers feel more disposed to make purchases, and besides, the season is getting late and it is desirable to have as much work done as possible before the ground freezes. This is causing much activity throughout the Northwest. The city of Chicago opened bids last week for 1300 tons of Water Pipe—namely, U. S. Cast Iron Pipe, \$23; R. D. Wood & Co., \$24.90, and B. Clow & Son, \$24.95.

Steel Billets.—Little has been done during the week in Billets, but earlier in the month quite a tonnage was placed by consumers in this vicinity. Quotations for ordinary 4 x 4 Billets are \$19.50 to \$20.

Old Material.—A peculiar condition of affairs developed quite recently in the market for Old Material. Certain consumers of Old Iron Rails found it necessary to enter the market for considerable quantities, and their purchases caused quotations to advance with every lot bought. Other consuming interests requiring Railroad Wrought were likewise required to pay advancing prices on purchases made of that class of material. Other kinds of Scrap were in a similar manner affected by special causes, and prices were advanced. These developments can hardly be expected to govern the entire Old Material market, but merely indicate what can take place when buyers are known to be seeking a supply. The general market is quiet and the leading consumer of Scrap is reported to be well stocked with material and in a position to be quite indifferent for some time. It is therefore likely that the higher prices given in the schedule below could not be realized by those anxious to make sales. The following are the approximate quotations per gross ton:

Iron Rails.....	\$13.50 to \$14.00
Steel Rails, mixed lengths.....	10.00 to 10.50
Steel Rails, long lengths.....	11.00 to 11.50
Relaying Rails.....	18.00 to 20.00
Car Wheels.....	16.00 to 17.00
Misting Scrap.....	10.00 to 10.50
Mixed Steel.....	8.00 to 9.00
Iron Fish Plates.....	12.50 to 13.00
Steel Fish Plates.....	10.00 to 11.00
Iron Car Axles.....	16.00 to 16.50
Steel Car Axles.....	14.00 to 14.50

No. 1 Railroad Wrought.....	13.00 to	13.50
No. 2 Railroad Wrought.....	10.50 to	11.00
Shafting	15.00 to	16.00
No. 1 Wrought.....	10.00 to	11.00
No. 1 Country Wrought.....	9.00 to	10.00
No. 1 Mill.....	7.50 to	8.00
No. 2 Mill.....	6.00 to	6.50
No. 1 Busheling.....	8.50 to	9.00
No. 2 Busheling.....	7.50 to	8.00
Iron Axle Turnings.....	8.50 to	9.00
Soft Steel Axle Turnings.....	7.50 to	8.00
Machine Shop Turnings.....	7.00 to	7.50
Wrought Drillings.....	6.00 to	6.50
Cast Borings.....	4.00 to	4.25
Mixed Borings, &c.....	4.50 to	5.00
No. 1 Boilers, cut.....	8.50 to	9.00
No. 2 Boilers, cut.....	7.00 to	7.50
Boiler and Ship Scrap.....	8.00 to	8.50
No. 1 Cast.....	11.00 to	11.50
No. 2 Cast.....	8.50 to	9.00
Railroad Malleable.....	10.50 to	11.00
Agricultural Malleable.....	9.00 to	9.50

Metals.—A fair volume of business is doing in Copper, with unchanged quotations, Lake being held at 17c. and Casting Copper at 16½c. Lead is moving quite satisfactorily and is still held at 4.32½c. for Desilverized and 4.42½c. for Corroding, in 50-ton lots.

W. A. Ahrens, 59 Dearborn street, Chicago, has been appointed Western sales agent for the Pittsburgh Steel Shafting Company, manufacturers of a full line of Turned Shafting.

The American Bridge Company announce that August Ziesing has been appointed as the general Western representative of the company, with headquarters at Chicago, Ill.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building,
Pittsburgh, September 26, 1900. {

(By Telegraph.)

Pig Iron.—The Bessemer Pig Iron market continues dull and weak, and prices seem to be lower. There has been a sale of about 2,000 tons of Standard Bessemer at \$13.50, Pittsburgh. However, for small lots \$14 is still being quoted. Sales are reported of a round lot of Low Phosphorus Bessemer Iron at a price equal to \$22, Pittsburgh. A leading interest is reported to have contracted for 8000 to 10,000 tons of Low Phosphorus Iron at close to the above prices. The Iron, however, did not come here. Some Gray Forge is selling at about \$13, Pittsburgh. There is a much better demand for Foundry Iron and some reports are that prices are a trifle firmer. We quote Standard Bessemer at \$13.50 for round lots and \$14 for small lots; Gray Forge, \$13; No. 2 Foundry, \$13.75 to \$14 in large lots and \$14 to \$14.25 for small lots, all f.o.b. Pittsburgh.

Billets.—The market is quiet and the nominal price of Bessemer Billets is \$17, maker's mill, Pittsburgh. We can note a sale of a small lot of Soft Basic Open Hearth at about \$18, maker's mill. None of the local mills seem to be selling any Bessemer Steel in the open market of any account.

Bars.—We continue to quote Sheet Bars in long lengths and heavy weights at \$21, Pittsburgh, but it is estimated that this price has been shaded. There is a good deal of demand for Light Tin Bars, running from 6 to 7 pounds to the lineal foot, and \$22.50 to \$23, Pittsburgh, is quoted on these.

(By Mail.)

The action of the Steel Rail Association in fixing the price of Rails for next year at \$26, at mill, is adversely commented upon here, and the opinion is that the price is too high, and will not have the desired effect of causing the railroads to come into the market and place orders. The settlement of the Puddling and Bar scales at the Cincinnati conference on Sunday morning is regarded with a good deal of satisfaction by both the companies interested and the whole Iron trade as well. Strikes at any time are unpleasant, and to have one in the Iron trade this year would have had a very bad effect. The scale adopted is a compromise, each side having made concessions in order to fix the matter up. The Iron trade remains in practically the same condition as noted in this report last week. There has been some business placed in standard Bessemer Iron, but at the sacrifice of lower prices. Steel is quiet, with hardly enough doing to establish a market. In Finished Material there is a fairly large volume of business, but the tone of the market is only fairly strong. It is not believed that prices will show much of a permanent ad-

vance until after the election. While the result of this important event is being largely discounted, yet at the same time large buyers will do as they have done before, hold off until the result is known beyond all doubt.

Ferromanganese.—There has been a reduction in price of Ferro of \$10 a ton, and we now quote 80 per cent. domestic at \$75 per gross ton, delivered.

Structural Material.—There have been no large jobs recently given out, but we are advised there is a good general demand, and the tonnage being placed with the mills now is larger than for some time past. A good deal of foreign work is being figured on, and one or two jobs requiring good sized tonnage will likely be placed within a very short time. The American Bridge Company are figuring on a large amount of foreign work, and have already taken some nice orders abroad. We quote: Beams and Channels, up to 15-inch, 1.50c.; over 15-inch, 1.60c.; Angles, 3 to 6 inches, inclusive, 1.40c.; over 6 inches, 1.50c.; under 3 inches, 1.25c.; Zees, 1.50c.; Tees, 1.55c.; Bars, 1.10c. to 1.15c.; Universal and Sheared Plates, 1.10c. to 1.15c., all f.o.b. Pittsburgh.

Plates.—We continue to report an active demand for Plates, and the tone of the market is quite firm, but prices are no higher. Most of the leading mills have a good deal of tonnage booked, and are not going after business as aggressively as they did some time since. We quote Tank quality, ¼ inch and heavier, at 1.10c. for large orders, and 1.15c. for small lots. We quote Shell at 1.20c. to 1.25c.; Flange, 1.30c. to 1.35c.; Fire Box, 1.50c. for medium quality, 1.75c. to 2c. for best quality.

Bars.—Demand for Bars has been good and prices firm for some time, but it remains to be seen what effect on the market the starting up of the mills of Republic Iron & Steel Company and American Steel Hoop Company will have. Both these concerns are understood, however, to have taken large contracts, and it is expected there will be enough work to keep all the plants running full. There is a good demand, buyers placing orders quite freely. We quote Steel Bars at 1.15c., but, as noted before, it is possible that on a good specification and large tonnage, 1.10c., at mill, half extras, could be done. We quote Common Iron Bars at 1.25c., at Valley mill, or 1.30c., Pittsburgh. High grade Refined Iron Bars are quoted at 1.70c. to 1.75c., at mill.

Steel Rails.—The action of the Steel Rail Association last week in fixing the price of Rails at \$26, at mill, was a good deal of a surprise to the trade, which expected a much lower price would be made. It is the general opinion that this price is too high and will have the effect of causing the railroads to hold off placing orders.

Muck Bar.—There has been a good deal of tonnage sold in Muck Bar in the last couple of weeks, and good prices have been obtained. However, with the starting up of so many more mills, it is not unlikely the price of Muck Bar may decline. We note sales of close to 3000 tons of Muck Bar of standard grades at \$25, delivered at buyer's mill, Pittsburgh.

Sheets.—There is a continued good demand for Sheets, and the smaller mills are filled up with tonnage for the next six weeks or two months. The leading interest is starting up additional mills in order to meet the increasing demand for Sheets. The tone of the market is strong, and we quote No. 27 Black, Box Annealed, one pass, at 2.85c.; No. 28, 2.95c. As noted last week, it is possible that on very desirable orders, and for large lots, slightly better might be done. We quote Galvanized Sheets at 75 off, 15c. freight, in large lots. For small lots 70, 10 and 2½ per cent., 15c. freight is quoted.

Merchant Steel.—There is nothing of special interest to note. Most of the business being placed now is for small lots, the large consumers having placed their contracts some time since. Specifications on these contracts are coming forward quite freely. We quote: Tire Steel at 1.25c. in carloads and 1.35c. in small lots. Open Hearth Spring, 1.60c. to 1.75c. in small lots; Toe Calk, 1.60c., half extras; Hammered Lay Steel, 4c.; Rolled Lay Steel, 3c.; Cold Rolled Shafting, 60 and 10 per cent. off in carloads; Tool Steel, 7c. and upward, depending on quality. On Tool Steel in lots of 500 pounds and over freight is allowed east of the Mississippi River. Terms are 60 days, 2 per cent. off for cash in 10 days.

Iron and Steel Skelp.—The Skelp market at this time is very firm, and good round prices are being obtained for Grooved and Sheared Iron Skelp. However, the coming into the market of so many additional mills may possibly bring about lower prices. We continue to quote Grooved and Sheared Iron Skelp at 1.40c. to 1.50c., f.o.b., Pittsburgh, depending on the order. We may note that Sheared Iron Skelp, narrow widths, has sold up to 1.55c., delivered at buyer's mill. We quote Grooved and Sheared Steel Skelp at 1.30c. to 1.35c., f.o.b. Pittsburgh.

Pipes and Tubes.—The market on Tubular goods continues in a very satisfactory condition, the demand be-

ing quite good, while prices are firmer than they have been for some time. As noted last week, there is a heavy demand now for Oil Country goods. Prices to consumers in carload lots are as follows:

Merchant Pipe.			
	Black. Per cent.	Galvd. Per cent.	
1/4 to 3/4 inch and 11 and 12 inch.....	61	48	
3/4 to 10 inch.....	68 1/2	56	
Casing, Random Lengths.			
	S. & S.	I. J.	
2 to 3 inch.....	55	48	
3 1/4 to 4 inch.....	60	56	
4 1/4 to 12 1/2 inch.....	65	61	
Casing, Cut Lengths.			
	S. & S.	I. J.	
2 to 3 inch.....	50	42 1/2	
3 1/4 to 4 inch.....	56	51 1/2	
4 1/4 to 12 1/2 inch.....	61 1/2	57	
Boiler Tubes.			
	Up to 22 feet. Per cent.	22 feet and over. Per cent.	
Steel.			
1 inch to 1 1/4 inch and 2 1/2 inch....	49 1/2	44 1/2	
1 1/4 to 2 1/4 inch.....	45	39 1/2	
2 1/4 to 13 inch.....	57	52 1/2	
Iron.			
1 inch to 1 1/4 inch and 2 1/2 inch....	53	49	
1 1/4 inch to 2 1/4 inch.....	49	44	
2 1/4 inch to 13 inch.....	60	55	
Charcoal Iron.			
1 to 1 1/4 and 2 1/2 inch.....	49 1/2	44 1/2	
1 1/4 to 2 1/4 inch.....	45	39 1/2	
2 1/4 to 13 inch.....	57	52 1/2	

Iron and Steel Scrap.—The settlement of the Puddling and Bar mill scales means the starting up of mills of Republic Iron & Steel Company and American Steel Hoop Company, which have been idle since July 1. These two concerns are large consumers of Scrap, and the starting up of their mills will no doubt bring about a better demand for Scrap than has existed for some time. There have been so few sales recently that accurate prices of Scrap are difficult to give. We quote as follows: No. 1 Railroad Wrought Scrap, \$12 net ton; Old Iron Rails are scarce and as high as \$16.50 gross ton has been paid. Old Steel Rails are \$12 to \$12.50 gross ton; Cast Iron Borings, \$5 to \$5.50; Turnings, \$5.50 to \$6; Soft Busheling Scrap, \$11 to \$11.50 gross ton; Tank and Pipe Scrap Sheared, \$11; Old Horseshoes, \$12 net ton.

Connellsville Coke.—We can report a better demand for Coke, due to the starting up of a few more blast furnaces. Indications are that the demand for Coke in the last three months of the year will be larger than for the three months just closing. In the Connellsville region last week out of 20,338 ovens, 14,017 were active and 6521 idle, the output having been 154,748 tons. We quote strictly Connellsville Furnace Coke at \$2, and 72-hour Foundry Coke at \$2.25 to \$2.50 in net tons at oven. Coke made outside the Connellsville region by small operators is quoted at much lower prices.

Philadelphia.

Office of The Iron Age, Forrest Building, {
PHILADELPHIA, PA., September 25, 1900. }

The situation in Iron and Steel is not materially different to what it was a week ago, except that it is gaining somewhat in activity. Prices are feverish and irregular, but, as mentioned last week, there is a disposition to talk them higher, but without success, as they average just about the same as they did two or three weeks ago. The position has become more complicated, however, by the labor conditions. A large number of iron workers are to resume work in the West after three months' idleness, and over 100,000 miners and laborers have gone out in Eastern Pennsylvania; what the effect will be it is impossible to say, except that it is not likely to be conducive to improvement in business. As regards the probable effect on the Iron market, opinions vary. If work can be found for the Iron workers in the West, it ought to help the Pig Iron market; but in case the product of the mills cannot be placed without breaking prices, it is difficult to see in a commercial sense where the benefit comes in. Eastern mills have been sending a great deal of Muck Iron to Western consumers, but as the scale has been signed by the Amalgamated Association, it is expected that they will now be independent of the Eastern markets; hence there may be less activity locally, and possibly a little weakness in Mill Irons. It is very difficult, however, to say what may happen in times like these; all that is known as a fact is that there is more business than there was a month ago, and steady to firm prices.

Pig Iron.—A good steady demand is reported all along the line. The lots taken are not large as a rule, although in some cases buyers have covered for the balance of the year, and, in a few, for one or two months beyond that. As a rule, however, 30 to 60 days is as far as the average trader cares to go, but it is noticed that in all

cases there is a stipulation for prompt shipments. There is an impression that the reduced output at furnaces is beginning to be felt, and that the next monthly statement will be more favorable than the two or three immediately preceding. There is, in fact, a disposition to be somewhat optimistic as regards the Pig Iron situation, although as yet it is not manifested either in better prices or in purchases for long delivery, but there is no doubt that the feeling is more hopeful. A good deal of business is being done in special Irons, one sale for 10,000 tons of Low Phosphorus Iron having been made by an Eastern company for shipment to a Western Pennsylvania Company. Basic Iron has also been sold to a limited extent, and could be sold on a larger scale at about \$14, but holders usually quote \$14.50 to \$14.75, although some business has been done at \$14. In a general way last week quotations fairly represent the market, which is about as follows: No. 1 X Foundry, \$17 to \$17.50; No. 2 X Foundry, \$15.50 to \$16.25; No. 2 Plain, \$15 to \$15.50; Mill Irons, \$14 to \$14.50; Ordinary, \$13.50 to \$14; Basic, \$14 to \$14.50; Bessemer, \$15 to \$16; Low Phosphorus, \$22 to \$24.

Billets.—There is business to be had, but it appears to be difficult to agree upon prices. Sellers quote \$20 to \$20.50 for ordinary Bessemer, but buyers are running more toward Open Hearth Steel, which is held at \$20.50 up to \$25, according to carbon.

Plates.—Mills are so well supplied with orders that they are now very firm on prices. There is no great amount of new business on the market at the moment, but the outlook indicates a heavy consumption during the fall and winter months; so that it is pretty generally recognized that prices are not likely to go below the figures now quoted, and may possibly go somewhat higher. To-day's quotations for carload lots and upward are about as follows for city or nearby deliveries: Plates, 1/4 inch and thicker, 1.30c. to 1.35c.; Universals, 1.30c. to 1.35c.; Shell, 1.40c. to 1.45c.; Flange, 1.50c. to 1.60c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—There is very little change to notice in this department. The mills have a great deal of work on their books, and will undoubtedly be able to run full for a long time to come, as there is a large amount of business in prospect, besides what is already in hand. Prices unchanged, as follows: Beams and Channels, 15-inch and under, 1.60c. to 1.65c.; Angles, 3 to 6 inches, 1.30c. to 1.40c.

Bars.—There has been an excellent demand for Bars; most of the mills are very comfortably situated as regards orders on their books. It has been intimated that the resumption of work at reduced wages might affect prices unfavorably, but stocks have been run down to such an extent that there must be a big demand for some time to come. The foreign demand is also well maintained, so that for the present at all events there appears to be good grounds for expecting a steady to firm market for Bars, which for city and nearby deliveries are now held at 1.30c. to 1.35c. for Best Refined Iron, and 1.20c. to 1.25c. for Steel Bars.

Sheets.—The situation is practically the same as defined last week, with increased emphasis as regards Thin Sheets. Prices are unchanged, as follows, for best Sheets (common Sheets two-tenths less): No. 10, 2.25c.; No. 14, 2.35c.; No. 16, 2.50c.; Nos. 18-20, 3c.; Nos. 21-24, 3.10c.; Nos. 26, 27, 3.20c.; No. 28, 3.30c.

Old Material.—The starting up of so many mills is expected to cause an increased demand for Scrap Material, and holders are now asking 50c. to \$1 advance on some grades of material. Buyers have not as yet acceded to these demands to any extent, but there is little doubt that sellers are in a strong position, and will secure better prices in the near future. Bids and offers are about as follows for deliveries in buyers' yards: Choice Railroad Scrap, \$14.50 to \$15.50; No. 1 Yard Scrap, \$12 to \$13; No. 2 Light Scrap, \$10.50 to \$11; Machinery Cast, \$14.50 to \$15; Heavy Steel Scrap, \$11.75 to \$12.50; Old Iron Rails, \$15.50 to \$16.50; Old Steel Rails, \$12.75 to \$13.50; Wrought Turnings, \$8.50 to \$9; Cast Borings, \$6.75 to \$7; Old Car Wheels, \$16 to \$18; Iron Axles, \$15 to \$16; Steel Axles, \$15 to \$16.

At a meeting of the stockholders of the Duncannon Iron Company, held at Duncannon, Pa., on last Friday, Rodman Wister of L. & R. Wister & Co. of Philadelphia was unanimously elected president to succeed his brother, the late John Wister, who was an officer of the company during 40 years, and president for the past 20 years. Mr. Rodman Wister's intimate connection with the trade and his knowledge of all its details are expected to insure the successful career which the company always enjoyed under their former management.

Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets,
CINCINNATI, September 26, 1900.

The Pig Iron market has been quieter again and perhaps scarcely so steady, though this is a matter of dispute. There have been no contracts taken for this territory worth the mention, and buyers will not venture beyond immediate needs until after the Presidential election. There has been a moderate run of small orders for prompt shipment, most of these being for Northern Iron on account of the lower prices which were current for these brands. Freight rates on Southern Iron have been reduced 50c. to all Ohio River points. This reduction has been very promptly handed over to the consumer, thus reducing all Southern grades by that amount. Instead, however, of injecting any activity into the market this reduction seems actually to have aroused the distrust which had appeared to be on the decrease for the past few weeks. Birmingham basis rates are unchanged, with the exception of Mill Irons, which are fairly well recognized, as herewith quoted. While nothing authentic is given out yet, it is considered reliable that Gray Forge has been offered and sold in small lots as low as \$8.25. Birmingham, and some Northern Iron of same grade is said to have been offered at even a cut on that figure. Freight rate from Birmingham is \$2.75 to this point; from the Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$14.25 to \$14.75
Southern Coke, No. 2.....	13.25 to 13.75
Southern Coke, No. 3.....	12.50 to 13.00
Southern Coke, No. 4.....	12.00 to 12.50
Southern Coke, No. 1 Soft.....	14.25 to 14.75
Southern Coke, No. 2 Soft.....	13.25 to 13.75
Southern Coke, Gray Forge.....	11.50 to 12.25
Southern Coke Mottled.....	11.50 to 12.25
Ohio Silvery, No. 1.....	18.25 to 18.75
Ohio Silvery, No. 2.....	17.25 to 17.75
Lake Superior Coke, No. 1.....	15.00 to 15.50
Lake Superior Coke, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 3.....	13.00 to 13.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$22.00 to \$22.50
Standard Southern Car Wheel, No. 2.....	21.25 to 21.75
Lake Superior Car Wheel and Malleable.....	19.00 to 20.00

Plates and Bars.—The market is quiet and unchanged at last week's figures. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 1.00c., with half extras; in small lots, 2c., with full extras; Bar Steel, carload lots, 1.70c., with half extras; small lots, 2c., with full extras; Iron Bar Angles, 1½ x 3-16 and larger, in car lots, 1.75c.; small, 2.25c.; Sheets, No. 10, 2.25c.; No. 27, Steel, 3c.; Plates, 2c. to 2.25c.

Old Material.—The market is very dull. Dealers' buying prices per gross ton, f.o.b. Cincinnati, are about as follows: No. 1 Wrought Railroad Scrap, \$11 to \$12; Cast Railroad and Machine Scrap, \$10 to \$11; Iron Axles, \$14 to \$15; Iron Rails, \$12 to \$13; Car Wheels, \$14 to \$15.

Cleveland.

CLEVELAND, OHIO, September 25, 1900

Iron Ore.—The market this week has seen an increased interest taken in the movement of wild Ore down the lakes, but rather than indicating any increased movement of that product, it has simply suggested a maneuver on the part of the vessel owners who have contract material to carry. Whatever else it has done, however, it has lowered permanently the carrying rate from the head of the lakes to 65c., about which there was some doubt. The vessel men having contracts to carry large blocks of Ore at \$1.25 found that they could get boats to take the places of those which were engaged in that business at 65c., and could send the original boats to Chicago after grain at 2c. on the hundred, which equals a 75c. rate on Ore from Duluth. This was done in a limited number of cases, and the market at once heard of a drop in the freights for carrying wild Ore from the head of the lakes. Before that time the rates had varied. The smaller vessels, those which carry 3500 tons of Ore, were receiving 70c., but the larger ones, which could make money at the lower rate, were content with 65c. The increased business fixed the freights definitely at 65c., upon which basis all wild business might now be said to be done. The occasion for this wild chartering, however, has passed away, and as there is but little more of Ore to be brought down the lakes the interest in the movement is dying out.

Pig Iron.—There are almost as many quotations on Pig Iron as there are furnaces and sales agents. It would be practically impossible to name a figure that would adequately represent the market. As nearly as it can be gotten at it seems that the market is represented by a quotation of \$14.50 to \$15 on No. 2, and

from \$15 to \$15.50 on No. 1 Foundry, Valley furnace. It is known that some considerable sales have been made at both of these prices.

Finished Material.—The bear element in the Finished Material market has broken loose and prevails as touching one grade. Plates are weaker now than they have been for several weeks. The quotation varies according to the mill making it. Some are holding out for 1.20c. stiff, while others are naming that as merely a possibility, and when it comes down to actual business are naming 1.15c. and 1.10c., being willing to sell at the latter figure. While the standard mills, having their capacity well covered by contract, and having but little material yet to market, are holding for the better price on Plates, making 1.20c. the absolute minimum, it is said that if a desirable order came along and could be obtained at no better price they would take it at 1.10c. also. The price of Bars does not seem to have shared the fate of Plates, for the market is still represented by 1.15c. strong, with some holding out for 1.20c. There is quite an amount of business being done on that basis. The price of Shapes holds, no effort being made to beat the association figures of 1.50c. on Beams and Channels and 1.40c. on Angles. The business is heavy enough to warrant a continuance of such prices. No very large sales have been made this week, but there has been a satisfactory volume of small business. The plant of the Union Rolling Mill resumed operations last night, having been idle three months.

Old Irons.—The market is still very quiet, awaiting the opening of some of the mills in this district. The dealers see a splendid market ahead, but not much is being done just now. They say that the tendency is toward better prices on the inquiries that are made, but the business is not robust enough yet to stand any advance now in the prices. The transactions, therefore, are light with the prices as low as they have been, hardly enough business being done to make any adequate quotation possible.

Birmingham.

BIRMINGHAM, ALA., September 24, 1900.

We have had the past week the same kind of a market as last letter presented. There was the usual run of small and limited orders from the domestic trade, and they were booked on the basis of \$11 to \$11.50 for No. 2 Foundry. Some large interests (notably one) came upon the market with good inquiries, but they eventuated in a very restricted business. The buying policy seems to be based on the "hand to mouth" principle. But there seems to be connected with the buying a desire for the shipment of purchases without delay. This can only mean a pretty close exhaustion of consumers' stocks. The writer would call the market a shade better from the simple fact that prices accepted the previous week were refused the past week. One interest refused \$9.75 for 1000 Gray Forge and \$10 for 2000 No. 3 Foundry, which they sold the previous week on a lower basis.

Since the commencement of these letters the writer does not remember a time when efforts to hammer the prices of Iron were so persistent as they have been of late. Rumors that had no stable foundation have been "rubber necked" and the imagination has been drawn upon when necessary to weight down prices. One interest would have positive information from a selling agent that a competitor was offering or had sold at a material concession under limit given him. The competitor would receive from his agent similar information. A conference and "a show down" would convince each that neither was guilty of the crime as stated in the indictment. On Saturday your correspondent saw a letter from a prominent firm saying, "We are authorized by Blank to offer Gray Forge on basis of \$9.50, Birmingham; No. 3 Foundry at \$10, and No. 2 Foundry at \$10.50." Yet the writer had just seen Blank, who declared most emphatically he was not competing for low prices and his price was on a basis of \$11 to \$11.50 for No. 2 Foundry. Your readers can appreciate, after reading this statement, the difficulty of arriving at true conclusions as to prices. There was some demand for Basic Iron and sales were made of a few thousand tons. The Talladega Furnace has been shut down, so it is announced, for repairs. As it was put in commission only last winter the inference is that the repairs mentioned refer to repairs on market prices. Others will in time follow the example.

The Steel mill is finding a ready market for its output and arrangements are still being made to increase this output. The Bar, Rod and Nail mills are pushing affairs and gradually increasing their output. So far they have had no occasion to pile up stock.

At a meeting of the various freight officials of the railroads interested in Iron tonnage, held in Atlanta the past week, the shippers were conceded a reduction of

50c. per ton to the territory known as Ohio River points as well as to North Atlantic ports not considered as ports of export for Southern Iron. No reduction was allowed on export iron. Whether the amount already booked for export had any influence in the conclusions arrived at is an open question.

What the shippers wanted and what they petitioned for was a concession of \$1 per ton to domestic points north of the Ohio River and 50c. per ton on export business. We were just \$1.25 per ton out of line for the Western trade, and this reduction of 50c. doesn't reach the seat of the disease. The roads north of the Ohio River will, it is expected, make a 25c. concession. The total, then, will be 75c. per ton. This isn't enough. The probe did not go deep enough.

The export trade still sends good inquiries and the prices named are satisfactory. But the bugaboos of limited ocean room and freight rates restrict the business. Yet there are more or less actual transactions every week.

One lot of 5000 tons was placed last week and at the close negotiations were pending for one lot of 5000 tons. Other orders of less magnitude were completed. With this district the dominant factors in this trade are ocean room and reasonable freight rates. And they will come. The demands of business never yet failed to be heard and granted.

The town of Aisley had a destructive fire in one sense of the word, inasmuch as property was destroyed. But the portion of the town destroyed was an eyesore to its every friend. It will be rebuilt and substantial brick structures replace the unsightly shacks the fire wiped out. None of the manufacturing plants were destroyed or injured.

Another industry will have an addition to its capacity as soon as it can be erected, and we will then have another Corrugated Iron works.

Our minor industries continue in active operation, but there is not that rush of business they had a year ago. The Hardie-Tines Company secured a contract for a 400 horse-power cross compound condensing engine for Brazil, South America. Such orders advertise the fact that we are not averse to expansion—in trade, anyway. There seem to be strenuous efforts in all directions to get affairs in shape so that the advent of winter will be no bar to the continuance of active operations. Improvements in the way of additions and new buildings are being completed as rapidly as possible. People who are house hunting spend weary days and fail to find what they desire. If rents are, as some claim, a criterion of the prosperity of a place, then Birmingham should be placed in the van. Landlords and real estate agents are testing the Biblical injunction, "Ask and ye shall receive," and the asking figures are by no means too low. There are no desirable, eligibly located houses to be had in the city limits, and the demand for them continues unsatisfied.

St. Louis. (By Telegraph.)

Office of The Iron Age, 1205 Chemical Building, }
St. Louis, September 26, 1900. }

Pig Iron.—A repetition of last week's report would safely apply to the situation in this territory to-day. Orders in some cases are more numerous, but buying is done in a small way only. No inquiries for large amounts have developed. It is known, however, that certain heavy consumers cannot stay out of the market very much longer. Other concerns have stocks on hand which will carry them to end of the year. Those who must buy are not disposed to provide for more than 30 days' wants. One large concern announced that they would stay out of the market until after election. Immediate needs are noticeable, and in some cases the buyers cannot have shipping day deferred even for a week, thus forfeiting the reduction of 50c. per ton, which has been announced by Southern roads as effective October 1. Some of the trade question the lower prices spoken of, and say it is difficult to ascertain whether they are on iron held for private account or figures were sanctioned by furnaces. We quote, f.o.b. cars, St. Louis:

Southern, No. 1 Foundry.....	\$15.25 to \$15.75
Southern, No. 2 Foundry.....	14.25 to 14.75
Southern, No. 3 Foundry.....	13.50 to 14.00
No. 1 Soft.....	15.25 to 15.75
No. 2 Soft.....	14.25 to 14.75
Gray Forge.....	12.75 to 13.25

Bars.—The principal item of interest to the trade is the reopening of mills, and whether prices will be affected thereby. It is said that mills now starting up are ready to take new business. The Tudor Iron Works of the Republic Iron & Steel Company, who employ approximately 1200 men, are to start up to-night on back orders which have remained unfilled during the shut down of three months' duration. Jobbers report the receipt of a very good line of country orders so far this week, in which car lots figured. As in other lines, buy-

ers are not looking far ahead. Mill prices for heavy tonnage are 1.30c. to 1.40c. for Steel; Iron, 1.40c. to 1.45c., half extras. Jobbers quote carloads from mill at 1.65c., full extras, for Steel; smaller lots of Steel and Iron range from 1.75c. to 1.90c., full extras.

Rails and Track Supplies.—Fair demand this week for Track Supplies, but nothing of particular moment. We quote Steel Splice Bars, 1.85c. to 1.90c.; Track Bolts with Square Nuts, 2.25c.; with Hexagon Nuts, 2.35c.; Spikes, 1.85c. to 1.90c.

Pig Lead.—The market is quiet and steady as to price. Soft Missouri is placed at 4.27½c.; Desilverized at 4.32½c. Lead Ore is stationary at \$46 per ton.

Spelter.—Inquiries are not active, and only a fair volume of sales. Latest sales aggregate 150 tons at 3.98c. and \$27.50 remained top price for Zinc Ore.

New York.

Office of The Iron Age, 232-238 William street, }
New York, September 26, 1900. }

Pig Iron.—Only a routine business is being done, with many sellers rather eager to take orders. Reports are again current of some very low offerings by some Southern interests. Quotations are as follows at tidewater: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16.50 to \$18; No. 2 X, \$15.25 to \$16.50; No. 2 Plain, \$14.25 to \$15.50; Gray Forge, \$13.75 to \$15. Tennessee and Alabama brands, No. 1 Foundry, \$15.75 to \$16; No. 2 Foundry, \$14.75 to \$15; No. 1 Soft, \$15.75 to \$16; No. 2 Soft, \$14.75 to \$15; No. 3 Foundry, \$13.75 to \$14; No. 4 Foundry, \$13.25 to \$13.50; Gray Forge, \$13 to \$13.50.

Cast Iron Pipe.—There are some moderate sized orders in the market for the metropolitan district. The market generally is very quiet. We quote for 8-inch Pipe, at tidewater, \$23 to \$23.50.

Steel Rails.—The announcement of the reduction in the price of Standard Sections of Steel Rails (50 pounds and over) from \$35 to \$26 at mill appears to have met with the disapproval of some of the railroad managers, who had been led to expect lower figures. The present price applies at once to business taken for delivery in the United States, Canada and Mexico, the market being open on export business. The buyers are guaranteed against lower prices on all purchases not shipped at the time of the announcement of any future reduction in price to the end of 1901. It is yet too early to judge how business will develop under the new conditions. The reports of sales agents are conflicting on this point. Some note a considerable inquiry, while others state that the interest is light. Very few actual sales appear to have been made as yet at the new price. In Light Rails the market is still represented by the quotation of \$25, delivered, while in Girder Rails \$38 to \$38.50 is quoted at mill. Relays are offered at \$20. We quote Spikes, 1.40c. to 1.50c.; Splice Bars, 1.25c. to 1.35c.; Square Track Bolts, 2.10c. to 2.20c., and Hexagon Bolts, 2.25c. to 2.30c.

Finished Iron and Steel.—The market is quiet, no large contracts being reported. In a quiet way a good deal of business is being done for export. Among recent sales are round lots of Bars, Hoops, &c., to Bombay, the Argentine Republic and to Australia. We understand that the American Steel Hoop Company are about to send a special agent to South Africa. We quote as follows at tidewater: Beams, Channels and Zees, 1.65c. to 1.70c.; Angles, 1.30c. to 1.40c.; Tees, 1.65c. to 1.75c.; Bulb Angles and Deck Beams, 1.90c. to 2c.; Universal Mill Plates, 1.25c. to 1.30c. Sheared Steel Plates are 1.20c. to 1.30c. for Tank, 1.35c. to 1.40c. for Shell, 1.50c. to 1.70c. for Flange, 2.10c. to 2.30c. for Fire Box, 3.50c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.30c. to 1.35c.; Common Bars, 1.15c. to 1.35c.; Soft Steel Bars, 1.15c. to 1.30c., and Hoops, 2c. to 2.25c., base, on dock.

Old Material.—This market is lifeless, with Old Steel Rails nominally at \$11 to \$11.50, and Old Iron Rails at \$13.50 to \$14.

Metal Market.

Office of The Iron Age, 232-238 William street, }
New York, September 26, 1900. }

Pig Tin.—Since our last report this market has declined to 27½c. for spot. During the last four days, however, as a result of the re-entering of the manipulators in the London market prices were again pulled upward, and to-day they closed 28.80c. to 29.25c. for spot. This is a slight advance over the closing price of last week. The London market, after declining to £126 10s. for spot, recovered to £132 12s. 6d. for spot and £128 for

futures. These were the closing prices to-day. It will be seen that our market is not quite up to the parity of London. This is said to be due to the heavy arrivals this month, which thus far have amounted to 3040 tons. The difference in London between spot and future has almost doubled within the last week, and it now amounts to about five points. Considering that in London as well as in Holland and this country there are sufficient spot supplies, the inference is that this entire advance is due to manipulation. The Banca sale to-day went at an average of 28.87½c., c.i.f. New York. At the same time the report comes from Holland to the effect that the sales of the Banca auction will again be increased to about 72,000 slabs for each sale.

Copper.—The market is quiet and unchanged. Lake Superior Ingot is still quoted 16¼c. to 16½c., and Electrolytic and Casting stock are obtainable at 16½c. During the last two weeks the domestic business is said to have fallen off considerably and the exports are not showing very well, amounting only to 7800 tons thus far this month.

In another column we print an article regarding the condition of the Brass industry in the Naugatuck Valley. The London market has gradually weakened and closed to-day easy at £72 17s. 6d. for spot and £73 10s. for three months' futures. Best Selected has declined 5 shillings and is quoted to-day £79 5s. The English Government tender for about 400 tons in London is said to have been accepted last Monday at rather low figures. We are unable to ascertain the exact figures as yet, however.

Pig Lead.—There is no change in this market, but London prices have undergone a slight advance. The American Smelting & Refining Company are quoting 4.37½c., New York, and 4.32½c., St. Louis. London is 2 shillings 6 pence higher, with quotations £17 17s. 6d.

Spelter.—Is quiet and steady, with no transactions involving large lots reported. The price here is unchanged, closing quotations being 4.10c. to 4.15c. for ordinary brands, and 4.25c. to 4.35c. for the special high grade brands. London is unchanged at £19 2s. 6d. Considerable interest is shown in the trade regarding the negotiations which are now under way toward the consolidation of the Spelter refining and Zinc mining interests. As we have previously stated options were secured on almost all of the plants which will expire on October 1. We are informed that these options include all the plants with the exception of the Edgar and Matthiessen & Hegeler works. It is stated on good authority that the former company have positively refused to become parties to the transaction. As for the latter we are now informed that they have decided to wait until after the Presidential election before they come to a decision as to whether or not they will allow the projectors options on their plants. It will thus be seen that in order to carry the present deal through it will be necessary to either secure new options or have the present ones renewed on the various plants which have already shown willingness to become parties to the deal. Although it is said that the project is backed by heavy financial interests, the trade look upon it as a gigantic scheme, since rather fantastic valuations have been placed on the plants on which options have been secured thus far.

Antimony.—Is unchanged. Hallett's is quoted 9¼c., and Cookson's 10½c.

Nickel.—There is no change, the metal remaining as strong as ever with only small lots offering. Prices of small lots are 55c. to 60c.

Quicksilver.—Is unchanged, prices quoted here being \$51 per flask of 76½ pounds for lots of 50 flasks or more. London cables £9 2s. 6d.

Tin Plate.—The expected change in price has taken place. Last Thursday evening the American Tin Plate Company announced a decline of 65c. per box. The new prices are to go into effect on October 1, and it will be understood that in the meanwhile the prices which we quoted last week will still hold. Allowing for the reduction the new price will be \$4.19 per box of standard 100-pound cokes, f.o.b. New York, and \$4 per box, f.o.b. mills. Other sizes and weights are on this basis. That some arrangement has been arrived at between the American Tin Plate Company and the tanners is evidenced by the fact that some of the tin shops are now in operation.

There has just been issued the admirable annual statistical report on all the Metals which is compiled by the Metallgesellschaft and the Metallurgische Gesellschaft A. G. of Frankfurt-on-the-Main, Germany. It deals with the world's production and consumption of Lead, Copper, Zinc, Tin, Silver, Nickel, Aluminum and Quicksilver.

PERSONAL.

F. W. Matthiessen of Matthiessen & Hegeler, spelter manufacturers, of La Salle, Ill., has returned from Europe.

C. M. Schwab, president of the Carnegie Steel Company, is now occupying the J. J. Vandergrift residence in the East End, in that city, which he purchased some time since. It is one of the most beautiful residences in Pittsburgh. Mr. Schwab's former home in Braddock will be occupied by Thomas Morrison, superintendent of the Edgar Thomson Steel Works.

W. Shook, a son of Col. A. M. Shook, who has been in charge for some years of the Alice furnaces of the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., has accepted the post of furnace manager of the North Eastern Steel Company of Middlesbrough, England. He sailed last Saturday.

Henry H. Quimby has resigned as chief engineer of the Phoenix Iron Works, Phoenixville, Pa., and has established the Quimby Engineering Company, with offices at 915 Ridge avenue, Philadelphia, Pa. The new firm will engage in consulting civil and mechanical engineering, and will take up the manufacture of Shaw's mercury pressure and vacuum gauges, succeeding Thomas Shaw.

W. F. Dixon has resigned as chief engineer of the Sormovo Works at Nijni-Novgorod, Russia, and has accepted a position with the Singer Mfg. Company. His address is Podolsk, Moscow Government, Russia.

R. Hakewessell of the Acme Machine Screw Company, Hartford, Conn., has left for a four to six months' European business trip. He expects to spend most of this time in England.

George Beard of Glasgow, Scotland, president of the West of Scotland Iron and Steel Institute, arrived on the "Umbria" last Saturday, and is the guest of his son, Ambrose Beard of the American Sheet Steel Company, New York. Mr. Beard will visit the principal iron and steel making centers and expects to leave orders here for steel bars and billets to be shipped to Scotland. His company have been purchasing supplies of these materials from the United States for some time past. It is Mr. Beard's intention to retire from active business next spring, he having spent 61 years of his life in the iron and steel trade. While in Chicago Mr. Beard will be the guest of his son, Thomas Beard, general agent of the Erie Dispatch Fast Freight Line.

E. H. Aldrich of Birmingham, Ala., has resigned as second vice-president of the Sloss-Sheffield Steel & Iron Company.

Among those who returned from Europe last week was Frank S. Witherbee of Port Henry, N. Y.

J. J. Cone of the Robert W. Hunt Company has returned to New York after a three months' pleasure trip abroad.

Edward Ascherson of Naylor, Bengon & Co., London, has just arrived in this country.

Theo. J. Shaffer, president of the Amalgamated Association, has tendered his resignation. It is stated that Mr. Shaffer will become head of the labor bureau of the American Tin Plate Company. There was a good deal of dissatisfaction in the Amalgamated Association over the action of President Shaffer in arranging a special scale for the Bay View mill of the Federal Steel Company, and his resignation at this time is attributed to this fact.

G. H. Claughton, a cousin of Lord Dudley, the owner of the Round Oak Works, and George Hatton, the managing director, are expected to arrive in a few days.

OBITUARY.

ISAAC RICHARDSON.

Isaac Richardson, a veteran machinist of Philadelphia, died on September 21 at Manayunk, aged 84 years. For 44 years he was connected with I. P. Morris & Co., Philadelphia, and was superintendent of one of their mills.

LEANDER R. KING.

Leander R. King, a prominent business man of Ithaca, N. Y., died at his home in that city on the 20th inst. Mr. King was born in Trumansburg, February 3, 1828. At the age of 23 he came to Ithaca and entered the employ of Treman Bros., hardware merchants. In 1857 Mr. King was taken in as a partner, and the firm name changed to Treman, King & Co., the present style. Mr. King retired from the firm in 1870 on account of ill health, but after a year of complete rest in California was able to resume his connection with the firm, con-

tinuing the relationship until his death. Mr. King was also a director of the Tompkins County National Bank and the Ithaca Water Works Company.

A. M. BYERS.

Alexander McBurney Byers, president of A. M. Byers & Co. of Allegheny, Pa., manufacturers of wrought iron pipe, died suddenly on Thursday at the Holland House in New York City, from heart disease. Mr. Byers was a native of Greenfield, Mercer County, Pa., where he was born 73 years ago. He began life as a workman in a blast furnace in Pittsburgh, but rose rapidly and subsequently became a member of the firm of Spang & Co. of Pittsburgh. In 1865 he organized the firm of A. M. Byers & Co., and engaged in the manufacture of wrought iron pipe. At the time of his death Mr. Byers was president of the company and also of the Iron City National Bank, and was interested in a number of industrial and other corporations. Mr. Byers' health began to fail after the death of his son, Alexander M. Byers, Jr., a year ago.

BENJAMIN CROWTHER.

Benjamin Crowther, who has been engaged as superintendent of furnaces in the Pittsburgh district for nearly 50 years, died at his home, in Etna, near Pittsburgh, on Monday. Mr. Crowther for many years was superintendent of the Isabella furnaces, at Etna, when they were owned by Spang, Chalfant & Co. and J. Painter & Sons Company.

The New York Machinery Market.

Office of The Iron Age, 232-234 William street,
New York, September 26, 1900.

General conditions are without change. Buyers are holding back considerable work and sellers are putting forth especial efforts to get business. Machinery salesmen who have for some time past been kept pretty busy attending to local trade are now out on the road. Prices are unchanged as far as this market is concerned, and we hear of but one change for the export market. The firm referred to lowered their prices about 2½ per cent. European business in American machinery is still quiet. Much more activity prevails in England, however, than on the Continent.

Another setback was given to the Pratt & Whitney, Niles-Bement-Pond negotiations. Another meeting of the stockholders was held at Hartford last Thursday. It was decided to adjourn until October 11. It is now stated that of the 27,500 shares of Pratt & Whitney stock all but 2500 shares have agreed to the proposed terms. The missing 2500 shares are said to be scattered, most of the holders still being away on vacations and abroad.

We are informed that the Niles-Bement-Pond Company have contracted for a large new factory building, which is to be added to their Bement-Miles plant at Philadelphia.

It is also said that a large addition will be built to the plant of William Sellers & Co., Incorporated, of Philadelphia.

We are reliably informed that there is another movement on foot for the establishment of new railroad shops. The Wheeling & Lake Erie Railroad are said to have plans under way for large extensions at Ironville, a suburb of Toledo, Ohio. A new machine shop, blacksmith shop, erecting shop and paint shop are to be built. They will all be equipped with new machinery and tools. Charles Hazen, master car builder, is said to be in charge of the new work. The present shops are said to be overtaxed on a large car order.

The Kelly Axe Company are said to be securing machinery for the rebuilding of their works at Alexandria, Ind., which were recently destroyed by fire. It is said that more than \$500,000 worth of material will be required in rebuilding the works.

There is a report going the rounds to the effect that the National Gear Wheel & Foundry Company of Allegheny, Pa., will enter the gas engine field. It is said that they are inquiring about for machinery with which to equip a new plant for building the engines.

Reports in the trade are to the effect that Hoopes & Townsend, the large manufacturers of bolts, nuts, rivets, &c., of Philadelphia, will erect a large rolling mill in Eastern Pennsylvania for preparing their own raw material.

We are informed that an addition will be built to the plant of Hilles & Jones, the large machine tool builders of Wilmington, Del. This company have recently added to their works.

All of the bids received for the naval coaling station which is to be erected at Frenchman's Bay, Maine, have been returned to the bidders, and a new lot of bids are now being asked for. The new bids will be opened on October 23 at the Bureau of Equipment, Navy Depart-

ment, Washington, D. C. R. B. Bradford is chief of the bureau.

Remington & Sherman of Richmond and Vienna streets, Philadelphia, are reported to be in the market for equipment for a blacksmith shop.

H. E. Maxfield, New York representative of the Lawrence Machine Company of 39-41 Cortlandt street, has just been awarded a contract for a 6000 gallon centrifugal pump by the De La Vergne Refrigerator Machine Company of this city. The pump is to be direct connected to a General Electric motor.

The New York & Queens County Railway Company are building an addition to their power station at Astoria, L. I. Thayer & Co., Incorporated, of 39 Cortlandt street, received the contract for the boilers. They will aggregate 1000 horse-power and will be of the Cahall water tube type.

The New York Safety Steam Power Company of 113 Liberty street received an order from the Callds Dairy Company of Fourteenth street, this city, for a heating plant, which will embody two 284 horse-power Worthington water tube boilers. Among other orders were: Two 262 Worthington boilers from George Schlegel of 140 Centre street, New York, a 150 horse-power direct connected engine and dynamo for an addition to the brewery of Birkenhauer & Baumann of Newark, N. J., and a 150 horse-power vertical engine from the East Albany Water Company of Rensselaer, N. Y.

Woolston & Brew of 141 Broadway have closed a contract with the Knoxville Cotton Company of Knoxville, Tenn., for a 400 horse-power compound condensing "Brown" engine.

The Buffalo Forge Company of 39 Cortlandt street received the contract for the lighting plant which will be built at New London, Conn., by the Navy Department. They also received an order from the Lafin-Rand Powder Company of Pompton Lakes, N. J., for two complete smokeless powder drying plants. These are to replace two which were destroyed by lightning at the works a short time ago.

The contract for the pumping plant, &c., in connection with dry dock No. 3, New York Navy Yard, was awarded to the United Engineering Company, whose offices are in the Park Row Building, New York. They are now subletting the contracts for the material required.

C. D. Wedge, vice-president of the Griffith & Wedge Company, builders of hoisting engines and the Ohio Corliss engine, of Zanesville, Ohio, has been in the city during the past week. He has completed arrangements appointing F. H. Gottlieb of 136 Liberty street, Eastern selling agent. Mr. Wedge reports excellent business at the works, stating that he is much behind on orders. He is arranging for an increase of the capacity of the Zanesville works.

The McGuire Mfg. Company of Chicago, who have offices at 15 Cortlandt street, this city, are about to erect large works in Great Britain. The firm are builders of electric trucks, and the expansion into English territory has been necessitated by the large demand from Europe. American machinery and equipment will be purchased for the new works.

It is reported that American machine tool builders will be offered an opportunity to submit bids to the firm of J. B. Brooks & Co., Limited, of Birmingham, England. It is said that the company have acquired land and are preparing to build extensive new stamping works near Rose Hill, Willenhall, England. This is to be worked as a branch establishment in connection with their existing plants.

The Wilmington Chemical Works, which are controlled by Brunner, Mond & Co. of London, are about to be rebuilt. They were recently destroyed by fire, involving a loss of \$750,000. The works contained a large amount of American machinery, and the company are now making overtures toward securing new equipment.

McIntosh & Seymour have been awarded a contract for an 850-kw. horizontal cross compound engine, which is to be added to the plant of the Mexico City Tramways. They also report orders for nine large engines which are to be shipped to various points in Japan.

The Standard Pneumatic Tool Company of Chicago have appointed F. A. Barbey their representative for the New England States, and have opened an office at 185 Sumner street, Boston, Mass.

Catalogues Wanted.—A new drop forging plant is being organized at Chester, Ill. Any one making machinery or supplies that are needed in that line, or in the line of commutators, are requested to send catalogues or price-lists, with discounts, to W. C. Kennedy, Chester, Ill. He was formerly connected with the Standard Drop Forging Company of Boonton, N. J.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING SEPTEMBER 26, 1900.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Sales.
\$29,000,000	Am. Car & Foundry, Common.....	14 -15½	14 -14 1-5	13½-14	13½-14	13½-14	-14	5,200
29,000,000	Am. Car & Fndry, Pref. (7 % Non-Cu.)	60 -62	59½-60	58 -59½	58 -58½	57½-58	58½-59	4,290
19,000,000	Am. Steel Hoop, Common.....	18 -18½	-18	17 -17½	17½-19%	17½-18	18 -18½	5,000
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)....	64½-65½	-65	.....	65 -65½	-65	-65	1,825
50,000,000	Am. S. & W., Common.....	30 -32½	29½-30½	29 -30½	29½-30½	29½-30½	29½-30½	49,218
40,000,000	Am. S. & W., Pref. (7 % Cu.)....	72 -72½	71½-72½	70½-71½	70 -71½	-71	70½-71½	8,525
28,000,000	Am. Tin Plate, Common, N. Y.....	25½-26	25½-25½	24½-25	24½-24½	24 -25	25 -26	7,085
18,325,000	Am. Tin Plate, Pref., N. Y. (7 % Cu.)..	-80	-79	.....	-77	.....	77½-77½	600
7,500,000	Bethlehem Iron.....	.....	.....	.....	.....	.....	.....	.....
15,000,000	Bethlehem Steel, Par \$50, \$1 paid in..	13 -13½	12½-13	-13	12½-13	-12½	12½	1,930
7,974,550	Cambria Iron, Phila.....	.....	44½-44½	.....	44½	.....	.....	214
16,000,000	Cambria Steel**.....	14½-15½	13½-15	14½-14½	14 -14½	13½-14½	13½-14	23,711
11,000,000	Col. Fuel & Iron.....	31½-32½	31½-31½	29½-31	29½-30½	29½-30	29½-29½	6,115
46,484,300	Federal Steel, Common.....	30½-31½	30½-31	30 -30½	30½-31½	31½-31½	30½-31½	25,207
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)....	63 -65½	63½-64	-63½	63 -63½	63½-63½	61 -61½	6,523
32,000,000	National Steel, Common, N. Y.....	24 -24½	-24	-24	23½-25½	23½-24	24 -25	3,473
27,000,000	Nat'l Steel, Pref., N. Y. (7 % Cu.)....	-82½	-82½	-82½	-83	.....	-83	820
40,000,000	National Tube, Common, N. Y.....	44½-45	44½-45	44½-45½	44½-45	.....	-45	2,240
40,000,000	Nat'l Tube, Pref., N. Y. (7 % Cu.)....	-92	92 -92½	.....	-92	.....	-92½	1,191
5,000,000	Penna., Common, Phila.....	.....	.....	.....	45½-45½	45 -47	.....	200
1,500,000	Penna., Pref., Phila.....	.....	-75	-75	.....	-75	.....	64
12,500,000	Pressed Steel, Common.....	36 -37½	-35½	35 -35½	35 -35½	34½-35	32½-33	3,037
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)....	71½-71½	71 -71½	.....	.....	.....	-70½	590
27,191,000	Republic Iron & Steel, Common.....	10½-11	10½-10½	10 -10½	11 -11½	10½-10½	10½-10½	5,450
20,306,900	Repub. Iron & Steel, Pref. (7 % Cu.)..	-53	50½-50½	-50½	-52	.....	51½	1,510
7,500,000	Sloss-Sheffield S. & I., Common.....	.....	.....	.....	.....	.....	.....	.....
6,700,000	Sloss-Sheffield S. & I., Pref. (7 % Non-Cu.)	62½-63½	62 -62½	.....	-62	.....	.....	712
20,000,000	Tennessee Coal & Iron.....	55½-63	56½-58½	54½-56½	53 -57	51½-53½	52½-55	66,262
1,500,000	Warwick Iron & Steel (par \$10).....	-8	7½	.....	-7½	-7½	.....	100

* Par \$50. ** \$9 per share paid in. † 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded Indebtedness: Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$9,822,000 Illinois 5%, \$7,417,000 E. J. E. R. R. 5%, \$1,600,000 Johnson 6%, \$6,732,000 D. & I. R. R. 5%, \$1,000,000 3d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel, \$2,561,000 6%; National Tube, none; Tennessee C. I. & R. Co., \$8,367,000 6%, \$1,114,000 7%, \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5%, Steelton, 1st, 1917, \$2,000,000 5%; Sparrow's Point, 1st, 1922, \$4,000,000, consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Co. Mort. 6% \$2,810,000, Col. Fuel & Iron Gen. Mort. 5% \$2,308,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$2,000,000, Sloss I. & S. general mortgage 4½% \$1,835,000.

Iron and Industrial Stocks.

Liquidation has continued in a good many of the steel stocks. It has been very conspicuous in the case of the Tennessee stock, one of the chief holders being reported to have sold out. Some lower figures have also been made on Federal Steel, preferred, Pressed Steel, common, and in some of the Philadelphia stocks like Pennsylvania, Bethlehem and Cambria.

	Bid.	Asked.
American Bicycle Company, common.....	5	5½
American Bicycle Company, preferred.....	29	31
American Bicycle Company, bonds.....	65	75
E. W. Bliss, common.....	.....	137½
E. W. Bliss, preferred.....	125	.....
Cramp's Shipyard stock.....	75	80
Diamond State Steel.....	3	3½
Empire Iron & Steel, common.....	6	10
Empire Iron & Steel, preferred.....	30	36
International Silver, common.....	3	4
International Pump, common.....	15	16½
International Pump, preferred.....	64	65
National Enam. & St., common.....	.....	20
National Enam. & St., preferred.....	73	78
New Haven.....	3½	3½
Otis Elevator, common.....	24½	25½
Otis Elevator, preferred.....	86½	87½
Pratt & Whitney, common.....	3½	5
Pratt & Whitney, preferred.....	50	55
Tidewater Steel.....	6½	6½
U. S. Cast Iron Pipe Company, common.....	3½	4
U. S. Cast Iron Pipe Company, preferred.....	26½	30
U. S. Projectile.....	95	100
Va. C. I. & C., stock.....	2½	4
Va. C. I. & C., bonds.....	27½	35
H. R. Worthington, preferred.....	.....	110

The following is a comparative statement of the earnings and expenses and net income of the Philadelphia Company in Pittsburgh for August:

	August, 1900.	August, 1899.
Gross earnings, from operation.....	\$126,189	\$117,070
Operating expenses and taxes.....	160,968	108,911
Net from operations.....	.....	\$8,158
Deficit.....	\$34,779	.....
Other income.....	60,861	43,625
Total earnings and other income.....	26,082	51,783
Deductions for leased lines, &c.....	4,980	2,541
Total net income.....	\$31,063	\$49,242
Interest on funded debt.....	17,187	16,666
Dividends on preferred stock.....	16,625	16,487
Surplus earnings.....	\$33,812	\$33,154
Deficit.....	2,749	.....

The total surplus of earnings for the first eight months of the fiscal year were \$656,177.33, against \$325,129.64 in 1899. The report of the affiliated corporation for the month of August shows total net income representing Philadelphia Company's interest of \$15,722, compared with a deficit of \$2404 in August, 1899. For the eight months of the fiscal year the total is \$416,058.99, an increase of \$224,986.80.

Diamond State Steel Company.—The income account of the Diamond State Steel Company for the fiscal year ended June 30 shows:

Gross profits.....	\$230,096
Less Iron Company rental.....	\$40,000
Less January dividend.....	60,000
	100,000
	\$130,096
Less items charged off.....	28,549
	\$101,546

The above earnings are from the old iron plant of the Diamond State Iron Company alone, the new steel plant having only been completed since July 1, 1900, and the result of its operations will not appear until the end of the present fiscal year.

The balance sheet as of June 30, 1900:

Assets.	
Cost of property and improvements.....	\$788,605
Rolls, patterns, patent rights, &c.....	157,944
Bills receivable.....	26,699
Investment account.....	52,021
Cash in bank.....	68,639
Accounts receivable.....	302,390
Raw and finished stock per inventory.....	406,095
Total.....	\$1,800,395
Liabilities.	
Capital stock.....	\$1,500,000
Accounts payable.....	198,849
Profit and loss surplus.....	\$201,546
Less annual rental or dividend Iron Company.....	40,000
Less dividend paid January 19, 1900.....	60,000
	101,546
Total.....	\$1,800,395

The annual meeting of the Diamond State Steel Company will be held on October 1 at Wilmington, Del.

The net earnings during August of the Tennessee Coal, Iron & Railroad Company were \$104,209, as compared with \$168,240 in August of last year. From January 1 the net earnings, this year, have been \$2,022,141, as compared with \$795,314 during the corresponding period of 1899.

The E. W. Bliss Company have declared their regular quarterly dividend of 2 per cent. on the preferred and 2½ per cent. on the common stocks, payable Oct. 1.

The Rhode Island Perkins Horseshoe Company have declared a quarterly dividend of 1 per cent. on their preferred stock, payable October 15 to stock of record October 1.

The Allegheny Heating Company of Allegheny, Pa., suppliers of natural gas, have declared the regular quarterly dividend of 3 per cent., payable October 27, also an extra dividend of 2 per cent.

The Westinghouse Machine Company of Pittsburgh have declared a quarterly dividend of 1½ per cent. on the preferred and ½ per cent. on the common stock, payable October 10.

The Philadelphia Machinery Market.

Office of The Iron Age, Forrest Building, }
PHILADELPHIA, PA., September 24, 1900. }

The machinery trade in Philadelphia is practically in the same condition as last month. Inquiries continue good, but have a tendency to be intermittent, one week producing an abnormal number and the next scarcely any at all. Some of the manufacturers are booking some substantial orders, while others continue quite active with work on hand due to previous bookings. A material improvement of present conditions is not looked for until after the November elections, although it is generally conceded that trade this fall has felt the effect less than has been done heretofore.

The manufacturers of the larger machine tools, pneumatic tools, hoists, compressors, &c., have been exceedingly busy, some few having so many orders on hand that they are refusing business except on long time delivery.

Foreign trade continues active, the inquiries from abroad are numerous, and considerable business is resulting therefrom. Some manufacturers are at the present time running their plants almost entirely on foreign orders.

The demand for the smaller class of machine tools is also good, though the purchases are being made only in small quantities, sufficient for immediate requirements.

A number of the various manufacturers are taking quite a serious view of the present labor difficulties between the anthracite coal operators and their employees. The coal storage facilities of many of the local plants are small, and those who have been dependent on the regular delivery of their fuel will no doubt feel severely the advance in prices recently made, and the probability of its increasing scarcity.

The American Pulley Company, manufacturers of all wrought steel split pulleys, are now receiving machinery for making pulleys from 24 inches diameter, their present limit, up to 42 inches diameter, inclusive, and will be ready in about 30 days to furnish those of the larger size. Some of the machinery is already in place, among which may be mentioned a large press made by the Bethlehem Steel Company. Inquiries have been very good, but they have been unable to take all the business offered because of inability to furnish the larger sizes. They will also be in position by November 1 to furnish general pressed steel work, particularly in heavy shapes. The foreign market has been very active, and will no doubt improve when they are able to furnish the larger and heavier pulleys used in mining operations.

The Link-Belt Engineering Company report a good volume of business. Orders, both foreign and domestic, have increased materially during the past month. An addition, 40 x 70 feet, has been made to their drafting room. Where they formerly employed 12 men in this department they now have 30, and they find it difficult to take care of the work. They have recently erected at Dewitt, N. Y., a large coal storage plant for the New York Central & Hudson River Railroad, and have in course of erection for the same company locomotive coaling stations at Utica, N. Y.; Kingston, N. Y., and Weehawken, N. J., each having a capacity of 400 tons, and one at Syracuse, N. Y., of 850 tons capacity; they are also engaged in erection of an extensive plant in Cuba for the handling of sugar cane, and have recently received an order for the erection of a coal storage plant of 250,000 tons capacity, at McClellan, Pa.

At the crane department of the Niles-Bement-Pond Company general activity continues. They are now installing a new Stirling boiler of 100 horse-power capacity, and the contracts have been let for the extensive improvements which were mentioned in our last report. Inquiries have been heavy, especially from abroad and the Middle and far West. They have recently completed and shipped to the Wm. Cramp Ship & Engine Building Company a large 30-ton electric crane, and have another of 10 tons capacity nearly ready for delivery. One 40-ton crane has also been shipped to the New York Ship & Engine Building Company, Camden, N. J., and shipments of castings and machinery parts have been made to Wheeling, W. Va., for remodeling the entire plant of Belmont Iron Company. Among orders recently closed is one 30-ton electric crane for the Phoenix Iron Company, and another for a 7½-ton crane for the Richmond Electric Company, Richmond, Va.

The Southwark Foundry & Machine Company continue busy in all departments. Inquiries have been good, and trade with them has resumed normal conditions. They are now building, among others, a blast furnace blowing engine for the Carnegie Steel Company and one for the Cambria Steel Company. They have also in course of erection a large engine for the Commonwealth Electric Company of Chicago, Ill., and a number of Weiss condensers, for which they are sole licensees.

The Otto Gas Engine Works make an excellent report as to the condition of business with them. Orders have been numerous, and they found it necessary to run all departments on overtime. Among recent deliveries was a 150 horse-power single cylinder engine to Sheble & Klemm of this city. This engine is the largest of its type in the United States. They have in course of construction seven marine gas engines of 100 horse-power each for use in the United States Government submarine boats of the Holland type.

The Philadelphia Roll & Machine Company have been quite busy. They have had numerous inquiries and the outlook for trade appears very good. Their output of late has been principally rolls, of which a number were shipped to the Maryland Steel Company. An intensifier, having a capacity of 4000 cubic inches of water, and one of the largest ever built, was recently shipped to the American Pulley Company. Among other orders may be noted one for castings for gun carriages for 10-inch disappearing guns, now being built for the Government by the Midvale Steel Company.

The Stow Flexible Shaft Company are running their plant regularly, but compared with last month they note a slight falling off in inquiries and orders both foreign and domestic. They have just shipped their fourth order of ten flexible shaft electric mining drills to one concern in Colorado, and have now in course of erection three portable electric drills, two of which are for the United States Government. They have also ready for shipment to the Transvaal an 8-inch cylinder boring bar. This machine will take in a cylinder 60 inches in diameter and 6 feet in length. Among recent orders may be mentioned one for ten flexible shaft drills for export to New Zealand, and others for their new crank pin cutters.

The Philadelphia Pneumatic Tool Company report business very good, having more orders for pneumatic tools than they can fill promptly. There has been no falling off in the volume of their trade. Foreign inquiries are good and seem to be heaviest from England, where their pneumatic rammers have aroused considerable interest. Shipments of pneumatic rammers and other tools have been made to England and Germany, and an order of rammers was sent just recently to Japan; Harlan & Hollingsworth, Deane Steam Pump Company and the Builders Iron Foundry of Providence, R. I., have been among the American consignees for these tools.

Edwin Harrington, Son & Co., manufacturers of drills, lathes, &c., report no falling off in inquiries or orders. They are very busy on their regular line, and at the same time have in course of construction a number of special machine tools.

Fredk. H. Gleim & Co., who have recently taken over the business of the late firm Lucas & Gleim, report exceedingly good business, both in the home and foreign markets. They have a number of special machine tools in course of erection, and among others have shipped one 18-inch rotary planer to the Westinghouse Machine Company, one No. 2 bar saw to U. Baird Machine Company, two horizontal tool room borers, one to Hill, Clarke & Co. of Boston, Mass., and one to Schischkar & Co., for shipment to Birmingham, England.

The Pedrick & Ayer Company have been and continue very busy on their general line of air compressors, pneumatic hoists, milling machines, jib and traveling cranes and special railroad shop tools. The volume of business has increased heavily, both in foreign and domestic markets. Every department of their plant is running to its fullest capacity.

Morse, Williams & Co. report inquiries heavy and resultant business very good. A number of good orders have been booked both for freight and passenger elevators. They are now busily engaged on work for elevators to be installed in Lit Bros.' department store and on numerous smaller orders.

Trade with the Pennsylvania Machine Company, though slightly dull during the early part of the month, has recovered and improved materially. Business in pneumatic drills has been very active. Among recent shipments may be noted: One 20-inch drill press, one 15-inch by 6-foot lathe, one 24-inch by 10-foot lathe and general supplies for Camden, N. J., deliveries; one 14-inch by 6-foot lathe for local, and one 30-inch by 7-foot upright boiler for Baltimore delivery.

The Lodge & Shipley Machine Tool Company, Philadelphia branch, report very considerable business, especially during the past month. Both inquiries and orders have been notably good for Reeves' variable speed countershafts; recent shipments having been made to William Sellers & Co., Incorporated; E. Harrington, Son & Co.; Midvale Steel Company, Bethlehem Steel Company and B. F. Sturtevant & Co. They have also shipped two 30-inch lathes, one for Philadelphia and the other for Allentown, Pa., delivery.

Harrison Safety Boiler Works continue busy; inquiries and orders remain good. Shipments now being

made of a 2500 horse-power battery of boilers to the Columbia Paper Company, Bristol, Tenn. Among the orders on hand is one for battery of boilers 10,000 horse-power capacity for the National Steel Company, Mingo Junction.

Dienelt & Eisenhardt report business with them in good shape; they are especially busy on oil cloth printing machines for export, their foreign trade being exceptionally good. The plant is running regularly and full number of men employed.

J. W. Paxson & Co. report a good volume of business in all their lines, and they are now in shape to take up the fall business. A number of orders have been booked for the new brass melting furnace recently placed on the market by them.

The Baldwin Locomotive Works have just completed erection of a six-story brick building, at the corner of Broad street and the Reading Subway, and are now busily engaged in the installation of machinery. This building will be used for general machine work, and is the natural growth, due to the congestion of work in the old shop. Inquiries are reported excellent, and business may be said to be normal after heavy falling off during June and July. Foreign business, however, will bear improvement. Regular shipments are being made to the Baltimore & Ohio, Union Pacific and Missouri, Kansas & Texas railroads. Six locomotives are now loading at New York on the steamship "British King" for shipment to Belgium, these being for the Belgium State Railroad. Among recent orders may be noted 22 locomotives for the New Zealand Government Railroad, six for the Rio Tinto Railroad Company of Spain, and ten for the Kansas City Southern Railroad. A number of small orders covering one and more engines have also been received.

The Neafie & Levy Company Ship & Engine Building Company are experiencing great activity in their yards. Work on the three torpedo boats for the Government is progressing rapidly, and they could be launched at an early date. The keel for the United States cruiser "Denver" has been laid, and workmen are now actively engaged on the frame. Contracts have just been signed for two large river passenger and freight steamers, and negotiations about concluded for a large ocean tug.

The Cleveland Machinery Market.

Office of *The Iron Age*, The Cuyahoga, {
CLEVELAND, September 24, 1900. }

Cleveland manufacturers in all lines agree that there has been an improvement in business within the past 30 days, and, despite the near approach of the Presidential election, there is a general feeling that there will be a slight but steady improvement up to November 4. After that, judging from the number of inquiries being received, there will be a pronounced improvement in all lines. Nearly every one agrees that the amount of business being received is as good as could be expected for this time in a Presidential year, while a few prominent people claim to believe that the election is having little effect on the business. They say that they hear almost nothing about the subject from their customers, and they attribute the general apathy in large contracts to the usual dullness of summer months and the unsettled conditions existing in the iron and steel market. In a few instances it is found that people are taking advantage of the comparatively low prices on structural material and are rushing projects to completion, feeling that the chances are for a decided increase in demand and a consequent raising of prices immediately after election; thus they are practically gambling on the results of the election.

Labor difficulties are still an annoying feature of the local situation. The striking molders are holding out for their demands with a persistency that is characteristic of this class of labor. They show no indication of weakening or returning to work on any but their own terms, and seem more determined than ever. In fact, the union is said to be preparing for an all winter fight by buying provisions and coal in wholesale lots and distributing them among the strikers. The National Founders' Association is making some gains in securing imported men, and it is claimed that 190 are now at work in the various foundries, but this number is far from sufficient to take care of all the work required by local people, especially since business has shown an improvement. Considerable work is being sent to Toledo, Akron and other places, but the method is not altogether satisfactory, resulting in troublesome delays. Whatever may be the rights and wrongs of the situation, the labor leaders who are abetting the present strike do not seem to appreciate the fact that they are injuring the manufacturing interests of Cleveland to an extent which is incalculable. The city is acquiring a reputation of being the storm center of the country for labor troubles, and aside from the busi-

ness which is driven away from Cleveland firms from the fear that contracts will not be delivered promptly, there is a still greater loss to the city from the fact that new projects cannot be induced to locate here; while concerns that otherwise would make extensions are casting about for propositions from other towns. Within the past month no less than three prominent concerns employing an aggregate of probably 500 men have solicited propositions from neighboring cities. One of them will close their plant in this city on February 1, while the other two deals are hanging fire, but will probably be accepted. All three give labor troubles as the chief reason for seeking other locations.

Naturally local people are greatly interested in the experiment that is being tried in Columbus for the settlement of labor difficulties, news of which is just at hand. It is stated that an agreement has been reached between the Metal Manufacturers' Association of Columbus and the officers of a new association just formed and known as the Machinists' Trades and Professions Association, by which all labor differences of whatever nature are to be submitted to arbitration. There are to be no lockouts on the part of the manufacturers and no strikes on the part of the employees, the differences to be adjusted by arbitration and the finding to be binding on each party. It is stated that Kilbourne & Jacobs Company, the Jeffery Mfg. Company and a number of other prominent concerns have signed the agreement.

The local office of the Westinghouse Electric & Mfg. Company has secured several very good contracts of late, among them being an addition to the power plant of the Deuber Watch Case Company of Canton, Ohio, consisting of a 75 kw. engine type direct current generator, 200 volts, 250 revolutions per minute, direct connected to a Buckeye engine; also switchboard and motors, as follows: One 20 horse-power, three 10 horse-power, four 5 horse-power, one 3½ horse-power, and one 2 horse-power. The Standard Sewing Machine Company of this city are also making an addition, consisting of a two phase alternating current 50 kw. generator, 240 volts, 900 revolutions per minute, and 7200 alternations, with exciter and switchboard; also three 7½ horse-power, type C., motors. Hiram College, at Hiram, Ohio, has contracted for a lighting plant, consisting of a 50 kw. generator, 125 volts, driven by a 100 horse-power Fisher engine. The Westinghouse Company are preparing to make an installation of a 300 kw. engine type generator, 550 volts, 135 revolutions per minute, in the new blast furnace of the Lorain Steel Company, Lorain. Power will be furnished by a 250 horse-power horizontal Buckeye engine.

The Cleveland Crane & Car Company have secured a contract for a 20-ton three motor crane for the factory addition of the Cleveland Punch & Shear Works. They report quite a decided improvement in business within the past 30 days, although the contracts secured are mainly small ones.

The Chisholm & Moore Mfg. Company have felt an increase of business during the past 30 days. They have secured contracts for a 10-ton pneumatic crane and two portable pneumatic hoists from a firm in Troy, N. Y.; a 10-ton pneumatic crane and three pneumatic hoists for a Stroudsburg, Pa., concern; a 10-ton pneumatic hoist from Newark, N. J., and a 15-ton pneumatic crane from Franklin, Pa.

The Garry Iron & Steel Roofing Company have recently added the manufacture of revolving pneumatic cranes for railway work to their line, and they have already secured contracts for a number for railways in this country; also orders for 15 to go to Europe and one to Canada. They report a very bright outlook for the new line. Among other contracts for structural iron work the Garry Company are preparing to erect a building 75 x 200 feet for the Cleveland City Forge & Iron Company.

The Chase Machine Company have just brought out a new steam towing machine for handling tow barges which has attracted considerable attention among vesselmen, being the first of its type shown on the lakes. They have secured contracts to equip four of the Corrigan fleet, also several of the Crostwright ocean going vessels.

The Acme Machinery Company find the domestic demand rather quiet, while the foreign business continues strong. A notable contract was one for a large bolt threading and heading machine from New South Wales, one of the first machines of the kind to go to that country.

The Kilby Mfg. Company report the demand for sugar machinery as being rather quiet at this time of year, although the large number of inquiries indicates a strong demand some weeks hence. The Michigan sugar beet field is developing rapidly, and this is looked upon as the most promising section of the country for another season. There is also prospect of excellent business from California. They have recently secured an order from Honolulu, which is in addition to the contracts closed last year. The Kilby Company are preparing for active

campaigning in the manufacture of heavy pumping machinery, and although they have thus far secured but one contract for this class of work, a 20,000,000 gallon engine for the Cleveland Water Works, their presence in this field has made a decided change in the situation. Last week bids were opened in Detroit for a new pumping engine, and while the Kilby Company were not the lowest bidder, it was very evident that the desire of this company to secure the business forced the other makers to close figures.

Bids were opened in this city several weeks ago for two or four 25,000,000 gallon pumping engines, but the contracts have not yet been awarded. The department is preparing plans for the necessary boiler house equipment and will call for bids in the near future.

The local office of the Ingersoll-Sargeant Drill Company, who have control of the sale of heavy air compressors for mining work, report a very fair demand for this class of machinery. Among other recent contracts they are to furnish the Consolidation Coal Company of Cumberland, Md., with a large outfit; also air compressors for the Buckeye Foundry Company of Cincinnati.

The Pelton Engineering Company, who have recently entered the machine tool field, have taken the agencies for Becker & Brainard, milling machines; Whitcomb Company, planers; Draper Machine Tool Company, lathes; Silk-Anderson Company, lathes; Flather Company, shapers; Kelley Company, shapers; Sibley & Ware, drill presses, and several other lines. Last week they sold to the Buckeye Steam Fitting Company, this city, a 9 to 16 inch Morris & Tasker pipe machine, claimed to be the largest machine of its kind in the State.

The Cleveland Punch & Shear Works report having experienced a decided improvement in business within the past 30 days. Orders are numerous, although scattered, and small contracts are the rule.

The Grant Machine Tool Works have accepted the proposition made them by business men of Franklin, Pa., and the company have been reorganized under the title of the Grant Tool Company. The new officers are Charles Miller, president; J. J. Grant, vice-president and general manager; A. R. Davis, secretary; W. J. Bleakley, treasurer, and R. H. Grant, works manager. The above, with J. C. Coffin, Samuel Plummer, J. W. Rowland and Henry Lamberton, constitute the board of directors. The new company have a capital stock of \$600,000, and \$100,000 has been appropriated for erecting a plant, and about half that amount for equipping it. There will be five buildings, the main shops 300 x 100 feet; a ball and screw machine department, 130 x 80 feet; pattern shop and storage, 100 x 30 feet, and power plant, 130 x 40 feet; also a fine office building. A contract has been placed for a 300 horse-power Brown automatic engine, and the company are open for bids on two 150 horse-power boilers, a 30-ton traveling crane, dynamos for lighting plant and considerable other machinery. They propose to devote much of their attention to the manufacture of heavy machinery for railway work, and already are figuring on a number of unusually large tools, as, for instance, a 72-inch planer and a 10-foot boring mill.

The McMyler Mfg. Company, hoisting machinery builders, have had a proposition from Warren, Ohio, business men for the removal of their factory to that city. They are anxious to secure larger quarters and it is quite probable that the proposition will be accepted.

The Clay Stamping Company plant, which passed back into the hands of the former owner, O. P. Clay, a few weeks ago, is to be disposed of at auction on September 29. Mr. Clay has other business interests which demand his attention, and the plant, consisting of a modern equipment of machinery for production of light stampings, together with a large number of orders, will be disposed of in a *bona fide* sale. George H. Bowler, Williamson Building, well-known machinery dealer, is in charge of the sale. George H. Bowler reports an improvement in business during the past three weeks. Small second-hand tools and engines of all sizes are especially good sellers at present.

S. M. York Company also say there has been an improvement in business during the past month. Orders are for small quantities, but the volume of business is proving very satisfactory.

The Cleveland Machine Screw Company say that the demand for their goods is holding remarkably well, and they are agreeably surprised at not experiencing the falling off in business felt by the majority of machine tool makers of late. Their foreign business continues very strong. A noteworthy contract was one closed last week for 18 automatic screw machines for a prominent concern in the southern part of this State.

The White Sewing Machine Company have been experimenting with steam automobiles for more than a year and are now preparing to go into the extensive manufacture of these vehicles for spring delivery. They have recently contracted for a considerable amount of additional machine shop equipment for this work.

The Hoffman Bicycle Company, heretofore prominent in the bicycle field, are also embarking in the new branch and are showing a vehicle of the steam type. With the purchase of a small amount of additional machinery they will be well equipped for this work.

The Atlas Bolt & Screw Company report a very satisfactory demand in their steel mining car department, but the bolt and screw business is rather quiet. Foreign trade is unusually good in the former department. Recently they secured contracts for 300 sugar cane cars for a Honolulu concern and 200 brick cars to go to Antwerp.

The Forest City Iron & Wire Company, structural iron work, report a very fair amount of business on hand, although few large contracts are being placed. Of late they say there have been several exceptions to this rule in this section; people have placed contracts and are pushing buildings to completion in anticipation that after election prices will go up and labor will be more difficult to obtain. The company believe this policy of gambling on the election is growing.

The Standard Welding Company are experiencing an increase in business and are preparing for a very busy winter. They are closing numerous orders for bicycle material and tubing and they believe that the bicycle business is far from being as dead as it is looked upon by many. They are devoting considerable attention to the automobile business, and they believe that this field presents a very promising opening for the further development of their electric welding process.

The Puddling and Bar Mill Scales Settled.

On Sunday morning, September 23, the conference committees of the Amalgamated Association of Iron and Steel Workers, Republic Iron & Steel Company and American Steel Hoop Company reached an agreement on the wage scale, fixing wages in puddling and bar mills for the year ending June 30, 1901. A settlement of the scale was reached only after an all night session, and was a compromise between the original demands of the men and the manufacturers. The Amalgamated Association committee had asked for a minimum rate of \$5 a ton for boiling on a 1.4-cent card. The manufacturers had offered \$4.50 a ton on a 1-cent card. Five different conferences have been held in trying to arrange a wage scale, and last week it looked very much as though a strike might take place, as officials of the Republic Iron & Steel Company had notified the Amalgamated Association Committee that unless a settlement of the scale was reached on Saturday night they would declare their mills open and refuse to longer recognize any labor organizations. The conference last week at Cincinnati commenced on Wednesday, and as stated above, terminated on Sunday morning. As soon as an agreement was reached telegrams were sent to the different mills of the Republic Iron & Steel Company and the American Steel Hoop Company to get them in readiness for operation. Already a good many plants of these two concerns, which shut down on June 30, are again in operation. The scale as stated above is a compromise, each side having made important concessions in order to reach a settlement. We give below the new features in the scale, as follows:

The Memorandum of Agreement is the same as in the old scale, with the single exception that where it should read July 1, 1900, it has been made to read "September 10, 1900." This was because a settlement was so long being reached. The scale is in effect from September 10, and expires June 30, 1901. No other changes are made in the Memorandum of Agreement.

The scale for boiling goes down to 1 cent minimum, but the boiling rate, when the card is 1 cent, 1.1 cents and 1.2 cents, is the same, or \$4.75 a ton.

The new scale for boiling is as follows:

Boiling.	
Based on actual sales of bar iron, as per conference agreement.	Boiling, per ton, 2,240 pounds.
1-cent bar iron.....	\$4.75
1.1-cent bar iron.....	4.75
1.2-cent bar iron.....	4.75
1.3-cent bar iron.....	4.87½
1.4-cent bar iron.....	5.00
1.5-cent bar iron.....	5.25
1.6-cent bar iron.....	5.50
1.7-cent bar iron.....	5.62½
1.8-cent bar iron.....	5.75
1.9-cent bar iron.....	5.87½
2-cent bar iron.....	6.00

The foot notes under the boiling scale are unchanged throughout, with the exception that a new foot note, No. 21, has been added reading as follows: "Wire and sides of sheets, No. 19 gauge and lighter, when in bundles not heavier than 40 pounds and not exceeding 18 inches in length, the price to be 65 per cent. of boiling scale. When over 40 pounds 25 cents extra shall be paid."

The scale for muck rolling is unchanged throughout, remaining at one-seventh the straight price for boiling.

The scale for scrapping and busheling has been materially changed. It is now headed "Piles on Boards," and is as follows:

Piles on Boards.

Based on actual sales of bar iron, as per conference agreement.		Piles on boards, per ton, 2,240 pounds.
1-cent bar iron.....		\$1.55
1.1-cent bar iron.....		1.59
1.2-cent bar iron.....		1.63
1.3-cent bar iron.....		1.67
1.4-cent bar iron.....		1.70
1.5-cent bar iron.....		1.73
1.6-cent bar iron.....		1.76

Foot note No. 1, which formerly read "Heating piles or blooms on sand bottoms shall be 108 3/4 cents per ton," has been changed to read: "Heating piles or blooms on sand bottoms shall be 87 cents per ton, and advance and decline in same proportion as above scale."

The other foot notes, Nos. 2 and 3, are unchanged.

The scale for busheling on sand bottom goes down to 1-cent base rate, as do all finishing mill scales. It is as follows:

Busheling on Sand Bottom.

Based on actual sales of bar iron, as per conference agreement.		
1-cent bar iron.....		\$2.09
1.1-cent bar iron.....		2.09
1.2-cent bar iron.....		2.09
1.3-cent bar iron.....		2.14
1.4-cent bar iron.....		2.19
1.5-cent bar iron.....		2.24
1.6-cent bar iron.....		2.29
1.7-cent bar iron.....		2.34
1.8-cent bar iron.....		2.39
1.9-cent bar iron.....		2.44
2-cent bar iron.....		2.49

Foot notes in the scale for "Busheling on Sand Bottom" are unchanged, except that a new foot note, No. 6, has been added, reading:

"Wire and sides of sheets, No. 19 gauge and lighter, when in bundles not heavier than 40 pounds and not exceeding 18 inches in length, the price to be one-half the price of boiling. When over 40 pounds 25 cents extra shall be paid."

The scale for knobbling goes down to 1-cent base rate, and is as follows:

Knobbling.

Based on actual sales of bar iron, as per conference agreement.		Scrap, per ton, 2,464 pounds.	Refined iron, per ton, 2,464 pounds.
1-cent bar iron.....		\$4.37	\$5.69
1.1-cent bar iron.....		4.46	5.81
1.2-cent bar iron.....		4.55	5.93
1.3-cent bar iron.....		4.65	6.06
1.4-cent bar iron.....		4.75	6.19
1.5-cent bar iron.....		4.85	6.32
1.6-cent bar iron.....		4.95	6.46
1.7-cent bar iron.....		5.05	6.59
1.8-cent bar iron.....		5.14	6.72
1.9-cent bar iron.....		5.23	6.85
2-cent bar iron.....		5.33	6.98

The two foot notes under knobbling scale are unchanged.

The scale for heating slabs and shingling goes down to 1-cent base rate, and is as follows:

Heating Slabs and Shingling.

Based on actual sales of bar iron, as per conference agreement.		Shingling muck iron and rehammered iron, 2,240 pounds.	Shingling charcoal iron, 2,464 pounds.	Heating, also shingling slabs and doubling, 2,240 pounds.
1-cent bar iron.....		\$0.69.8	\$0.76.5	\$0.69.8
1.1-cent bar iron.....		.71	.78.2	.71
1.2-cent bar iron.....		.72.4	.79.8	.72.4
1.3-cent bar iron.....		.73.8	.81.4	.73.8
1.4-cent bar iron.....		.75.8	.83.2	.75.8
1.5-cent bar iron.....		.77	.85.1	.77
1.6-cent bar iron.....		.79.1	.87	.79.1
1.7-cent bar iron.....		.80.6	.88.7	.80.6
1.8-cent bar iron.....		.82.1	.90.4	.82.1
1.9-cent bar iron.....		.83.6	.92.1	.83.6
2-cent bar iron.....		.85.1	.93.8	.85.1

The scale for bar and 12-inch mills goes down to 1 cent, and is as follows:

Bar and 12-Inch Mills.

Based on actual sales of bar iron, as per conference agreement.		Bar rolling and heating, 2,240 per ton.
1-cent bar iron.....		\$0.58.6
1.1-cent bar iron.....		.59.9
1.2-cent bar iron.....		.61.1
1.3-cent bar iron.....		.62.4
1.4-cent bar iron.....		.63.7
1.5-cent bar iron.....		.65.1
1.6-cent bar iron.....		.66.5
1.7-cent bar iron.....		.67.8
1.8-cent bar iron.....		.69.1
1.9-cent bar iron.....		.70.4
2-cent bar iron.....		.71.7

Foot notes in this scale, Nos. 1, 2 and 3, are unchanged. In No. 4 the first part, which formerly read as follows: "Roughing down on bar and 12-inch mill shall be paid not less than 19.1 cents per ton, with 2 cents

extra per ton where rougher has charge of guides and fixings, to be deducted from the roller's wages and paid by the company, and roughing up shall be paid not less than 15.9 cents per ton, to be deducted from the catcher's wages and paid by the company, and roughing shall advance and decline in accordance with basis above established," has been changed to read: "Roughing down on bar and 12-inch mill shall be paid not less than 17.6 cents per ton, with 2 cents extra per ton where rougher has charge of guides and fixings, to be deducted from the roller's wages and paid by the company, and roughing up shall be paid not less than 14.7 cents per ton, to be deducted from the catcher's wages and paid by the company, and roughing shall advance and decline in accordance with basis above established."

The balance of the foot notes of this scale, Nos. 5 to 10, are unchanged.

The prices for "mills making a specialty of working pipe or skelp from iron or steel" have been materially changed. For the bar and 12-inch mills, which formerly read "bar and 12-inch mills, when working pipe or skelp at 1.4 cent rate," has been changed to read: "Bar and 12-inch mills, when working pipe or skelp at 1 cent rate:"

	Per ton.
Rolling.....	\$0.52.8
Heating.....	.52.8

The foot notes in the scale for bar and 12-inch mills are unchanged.

In the scale for plate and tank mills, the paragraph reading "Plate and tank mills, when working pipe iron or steel at 1.4 cent rate, the price shall be as follows, and shall advance and decline in the same ratio as plate mill scale," has been changed to read as follows: "Plate and tank mills, when working pipe iron or steel at 1-cent rate, the price shall be as follows, and shall advance and decline in the same ratio as plate mill scale:

	Per ton.
Rolling.....	\$0.55.4
Heating.....	.67.1

"1. It is understood that none of the above prices will be used as a criterion to reduce the prices paid for working other material."

The scale for guide, 10-inch, hoop and cotton tie mills goes down to 1-cent base rate, and in the first paragraph has been changed to read: "It is agreed that the base price on a 1-cent card," &c., instead of 1.4-cent base card rate as in the old scale.

The new figures for guide, 10-inch, hoop and cotton tie mills have not been made up by either officials of the Amalgamated Association or the manufacturers, and to cover the reductions made in the scale which now goes down to a 1-cent card rate it has been agreed "that the figures given in the old scale are the prices on a 1.4-cent card rate as a basis, and are to be graded down to a 1-cent card rate." The new figures will be made up and will be incorporated in the new scale before being given to the printer.

The foot notes in the scale for guide, 10-inch, hoop and cotton tie mills are unchanged throughout.

The scale for plate and tank mills goes down to a 1-cent card rate, and is as follows:

Plate and Tank Mills.

Based on actual sales of bar iron, as per conference agreement.		Rolling common iron, per ton, 2,240 pounds.	Heating common iron, per ton, 2,240 pounds.
1-cent bar iron.....		\$0.62.1	\$0.74.6
1.1-cent bar iron.....		.63.3	.76.1
1.2-cent bar iron.....		.64.5	.77.6
1.3-cent bar iron.....		.65.7	.79.1
1.4-cent bar iron.....		.67.5	.81
1.5-cent bar iron.....		.69	.82.7
1.6-cent bar iron.....		.70.5	.84.5
1.7-cent bar iron.....		.71.8	.86.1
1.8-cent bar iron.....		.73.2	.87.7
1.9-cent bar iron.....		.74.6	.89.3
2-cent bar iron.....		.76	.90.9

The foot notes in the scale for plate and tank mills are unchanged.

The manufacturers were represented at the Cincinnati conferences by J. C. Corns of Massillon, Ohio; G. Watson French, Geo. L. Bard, W. L. Simonton, W. E. Taylor of Chicago; A. W. Houston of Cincinnati and James H. Nutt of Youngstown, representing the Republic Iron & Steel Company, and F. L. Clark of Pittsburgh, Thomas Parrock and M. E. Combs of Youngstown, representing the American Steel Hoop Company.

An important agreement made at the Cincinnati conference was that the price for boiling for September and October shall be \$5, being based on a 1.4-cent rate for bar iron. Prices for puddling and finishing, commencing with November, will be ascertained as heretofore—that is, the average price obtained for shipments of bar iron by the mills for two months will determine the price to be paid for puddling and finishing mills for the two succeeding months. These returns are made by the manufacturers to a committee of the Amalgamated Association under oath.

HARDWARE.

Condition of Trade.

MARKET conditions have not shown any marked change during the past week. In some instances jobbers are ordering in more liberal quantities, as their requirements demand, but only sufficient for nearby necessities. Purchases, as a rule, are confined to small quantities, which from the frequency of the orders indicate a fair distribution of goods to consumers. While there are but few quotable changes the general tendency of manufactured goods continues toward lower values.

Chicago.

(By Telegraph.)

It seems almost incredible that a comparison with September of last year should result in favor of the present month. It will be remembered that last September was a period of advancing prices, and that considerable speculative buying characterized the trade. That month's business was the largest in the history of the local Hardware houses. Nevertheless, it appears that the great record of that month is now to be surpassed. This is in the face of a decline in Hardware prices of from 10 to 40 per cent., according to the class of goods. The statement is conservatively made that this month will show an increase of at least 10 per cent. in the volume of business over last September. Consequently a much larger tonnage of merchandise is moving out. A peculiarity of current trade is that orders are invariably confined to small lots. Buyers are only covering their immediate wants, and will not anticipate to any extent. Their requirements compel them to send in orders even though they believe that prices may be lower the following week. The situation is, therefore, anomalous. Usually declining prices cause a shrinkage in business. The peculiarity of the present situation is explained on the ground that the masses are prosperous and that goods are being bought in this great volume for consumption. The largest distributors are as conservative in their purchases as the retailers. Jobbers are drawing on each other's stocks throughout the West, and paying full prices rather than place contracts with manufacturers for any considerable stock.

St. Louis.

The character of buying continues much the same as in recent weeks, buyers' wants being frequent and for limited quantities. A very good movement of seasonable goods has set in, and there is every prospect that sales for next few weeks will be of equally satisfactory volume. Customers' orders show a well defined need for the general line of goods in addition to distinctly seasonable articles. Cross Cut Saws, Lumber Tools, Loaded Shells, Shotguns and Rifles figure liberally in orders. Trade in Builders' Hardware may be said to show an increase, with indications that dealers' stocks have been well worked down. There has been a revision in certain grades of Builders' Hardware which some jobbers consider will bring a better demand. The reduction in Tin Plate applies to deferred deliveries, and will not affect stock for immediate delivery. Tin Plate seems scarce, and many in the trade express difficulty in having wants filled. Galvanized Iron and Stove Pipe Sheets are quite active. It is complained that manufacturers of Bale Ties are in general several weeks behind in shipments. Sisal Rope at lower prices is finding good call, and although Cotton Rope is advancing, its sale is satisfactory. The Heavy Hardware trade report a strong line of or-

ders as having been received early this week from out of town trade. Horseshoes and Nails are active, and Wagon Materials in favorable demand.

Notes on Prices.

Wire Nails.—There is no change in the condition of the Wire Nail market. Demand remains about the same, and prices are unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

New York.—The demand for Wire Nails has fallen off a little during the past few days, but not enough to affect business to any great extent. Slight irregularities are reported in the price of small lots from store. Quotations are as follows:

To retailers, carloads on dock.....	\$2.48
Small lots from store.....	2.55

Chicago, by Telegraph.—Trade in Wire Nails is running largely in excess of the volume of business in August. Nobody is buying in large quantities or placing contracts for delivery further ahead than two or three weeks, yet manufacturers find that their stocks are disappearing, and they are being compelled to start additional mills to keep up with the demand. The large Anderson mill of the American Steel & Wire Company was started on Monday, and now all the company's mills in this territory are running on full time, so as to keep pace with the steady growth of business. Jobbers report an excellent demand for Nails, with every indication of their sales continuing to increase. Carload lots are quoted at \$2.35 and small lots \$2.40.

St. Louis.—The volume of sales of Wire Nails has been of an even nature. Prices are probably being more carefully observed by jobbers. Price to retailers in carloads is \$2.45; for small quantities, \$2.55.

Pittsburgh.—There is an active demand for Wire Nails, and since our last report one or two more large mills of the American Steel & Wire Company have been started up. The character of the orders received from the jobbing and small trades indicates that stocks of Nails are exceedingly low, and a large business is expected for the next two or three months at least. The tone of the market is firm. There has been no change in prices, and we quote f.o.b. Pittsburgh; terms 60 days, or 2 per cent. discount for cash in 10 days as follows:

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

Cut Nails.—Since the last meeting of the Cut Nail manufacturers an effort has been made by them to prevent the cutting of prices; but irregularities at mill are still reported. The next regular meeting of the manufacturers is scheduled for the 27th inst. The trade evince considerable interest as to what action will be taken at that time. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.20
To jobbers in less than carload lots.....	2.25
To retailers in carload lots.....	2.30
To retailers in less than carload lots.....	2.40

New York.—The demand for Cut Nails is moderate. Some irregularity exists in the prices of small lots from store. Quotations are as follows:

To jobbers in carload lots on dock.....	\$2.13
To jobbers in less than carload lots on dock.....	2.18
To retailers in less than carload lots on dock.....	2.31
Small lots from store.....	2.25

St. Louis. There is nothing out of the ordinary business to record. Sales continue to be made at \$2.30 out of stock.

Pittsburgh.—Stocks of Cut Nails are light, but the large and small trade continue to buy in small lots. We quote, f.o.b. Pittsburgh, terms 60 days, 2 per cent. off in 10 days, as follows:

Carload lots.....	\$1.95
To jobbers in less than carload lots.....	2.00
To retailers in less than carload lots.....	2.10

Barb Wire.—Domestic demand for Barb Wire continues light. Prices remain unchanged as follows, f.o.b. Pittsburgh, net cash 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.50
To jobbers in carload lots, Galvanized.....	2.80
To jobbers in less than carload lots, Painted.....	2.55
To jobbers in less than carload lots, Galvanized....	2.85
To retailers in carload lots, Painted.....	2.60
To retailers in carload lots, Galvanized.....	2.90
To retailers in less than carload lots, Painted.....	2.70
To retailers in less than carload lots, Galvanized...	3.00

Ellwood and Baker Wire is 5 cents and Washburn & Moen Glidden 10 cents per 100 higher than the foregoing prices.

Chicago, by Telegraph.—The manufacturers are greatly encouraged by the recent increase in the demand for Barb Wire, and are expecting the heaviest trade they have ever had in the coming three months. Jobbers also experience an increased demand for shipments from stock. Small lots, Chicago delivery, are quoted at \$2.70 for Painted Barb Wire and \$3 for Galvanized Barb Wire.

St. Louis.—While no extraordinary buying of Barb Wire has been engaged in, the demand is of good volume. Painted in carloads is \$2.75; smaller quantities, \$2.85. Galvanized commands 30 cents advance on these prices.

Pittsburgh.—The domestic demand for Barb Wire is only fair, but we are advised that a large tonnage is being sent abroad. In fact, Barb Wire is being sent from this country to almost every other civilized place on the globe. For domestic trade we quote as follows: Galvanized Barb Wire, \$2.80, in carload lots to jobbers, and Painted at \$2.50. Terms, 60 days net, with 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—Orders for Plain Wire call for small lots in most cases. The demand is fair for such quantities, at unchanged prices. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.15	\$2.55	
To jobbers in less than carload lots.....	2.20	2.60	
To retailers in carload lots.....	2.25	2.65	
To retailers in less than carload lots.....	2.35	2.75	

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the advances indicated in the following table:

Plain Fence Wire Advances (Catch Weights).			
Nos.	Base	Galvanized.	
6 to 9.....		\$0.40 extra.	
10.....	\$0.05 advance over base.....	.40 "	
11.....	.10 " " " ".....	.40 "	
12 and 12½.....	.15 " " " ".....	.40 "	
13.....	.25 " " " ".....	.40 "	
14.....	.35 " " " ".....	.40 "	
15.....	.45 " " " ".....	.75 "	
16.....	.55 " " " ".....	.75 "	
17.....	.70 " " " ".....	1.00 "	
18.....	.85 " " " ".....	1.00 "	

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—There is an increasing demand for Plain Wire. Small lots, Chicago delivery, are quoted at \$2.35.

Pittsburgh.—Demand for Plain Wire is increasing, and it is probable there will be a good volume of business for

the next two or three months, or until cold weather starts. We quote:

	Plain.
To jobbers in carload lots.....	\$2.15
To jobbers in less than carload lots.....	2.20
To retailers in carload lots.....	2.25
To retailers in less than carload lots.....	2.35

Galvanized Wire up to No. 14 is 40 cents advance on Plain, Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. discount allowed for cash if paid in 10 days from date of invoice.

Shot.—There are apparently some irregularities in the Shot market, as the manufacturers are not in all cases adhering strictly to card prices. Intimations are given out that special figures will be furnished on good orders, and in some cases it is stated that if the order should contain a large proportion of the extra sizes of Buck and Chilled Shot, upon which there is the additional price of 25 cents per bag, it might be feasible to give a lower quotation than if the order called only for the small sizes.

Miscellaneous Wires.—The revision of the prices of Wire and Wire Products still continues, and within a short time a reduction of from \$6 to \$8 per ton has been made in the prices of Screw and Butt Wire. Some minor changes are from time to time made in quotations on goods in the Wire line.

Wire Cloth and Netting.—As a result of the meeting of manufacturers, held last week, it is understood that next season's prices for Poultry Netting and Screen Wire Cloth will not be named until the middle of November.

Glass.—The Glass situation at the factories has not changed materially during the past week. The American Window Glass Company's plants are in operation, and a number of independent factories are also making Glass. All departments are not operated by skilled labor, as the wage question has not been settled with all classes of workmen. Glass is being made, and it is estimated that enough new Glass will be on the market in the near future to supply demands. The American Window Glass Company do not consider the labor question in a sufficiently settled condition to announce prices. The National Jobbers' Association adopted a new list September 1, which is given herewith:

American Window Glass.
Per box of 50 square feet.

SINGLE.					
United inches.	Sizes.	AA	A	B	C
25.....	6 x 8 to 10 x 15.....	34.75	22.75	22.00	21.25
34.....	11 x 14 to 14 x 20.....	36.25	24.50	23.00	21.75
40.....	12 x 18 to 16 x 24.....	38.75	26.50	24.50	23.50
50.....	18 x 22 to 20 x 30.....	29.75	27.50	25.50	.....
54.....	15 x 26 to 24 x 30.....	32.25	29.50	26.50	.....
60.....	26 x 28 to 24 x 36.....	37.00	32.00	29.00	.....
70.....	26 x 34 to 30 x 40.....	39.75	36.00	32.00	.....
80.....	32 x 38 to 30 x 50.....	47.50	43.00	38.00	.....
84.....	34 x 36 to 30 x 54.....	49.00	44.75	40.00	.....
DOUBLE.					
		AA	A	B	
25.....	6 x 8 to 10 x 15.....	31.75	30.50	29.00	
34.....	11 x 14 to 14 x 20.....	39.25	36.25	35.00	
40.....	12 x 18 to 16 x 24.....	44.00	41.00	37.50	
50.....	18 x 22 to 20 x 30.....	47.50	44.00	40.00	
54.....	15 x 26 to 24 x 30.....	50.25	46.50	42.00	
60.....	26 x 28 to 24 x 36.....	51.25	48.00	44.50	
70.....	26 x 34 to 30 x 40.....	53.00	51.00	46.50	
80.....	32 x 38 to 30 x 50.....	56.50	54.00	49.00	
84.....	34 x 36 to 30 x 54.....	61.00	55.50	50.00	
90.....	30 x 56 to 34 x 56.....	63.75	57.75	52.00	
94.....	34 x 58 to 34 x 60.....	67.50	61.50	55.75	
100.....	36 x 60 to 40 x 60.....	71.25	64.75	58.75	

Above 100 inches, \$12.00 per box extra for every 5 inches.

This list is now in effect, and is subject to a discount of 85 and 20 per cent. for the first three brackets of single and double strength, and 90 per cent. discount for all sizes above, single and double. These discounts apply to both the East and West. It will probably be

some time before the new list and discounts come into general use, but some quotations are now being made on this basis. It is intimated that the American Window Glass Company may adopt this list. Demand for Glass is limited in this market.

Wrought Iron Padlocks.—A substantial reduction has been made in the price of Wrought Iron Padlocks, which are now regularly quoted at a discount of 75 and 10 per cent. instead of 70 and 7½ per cent., the former printed price.

Tire Bolts.—A reduction has been made by the associated manufacturers of Tire Bolts in the price of these goods, the base discount being now 70 per cent., instead of 65 per cent., as heretofore.

Cordage.—A further decline has taken place in the price of Manila Rope. Quotations on the basis of 7-16-inch and larger vary from 9½ to 10 cents per pound. Sisal Rope still holds at former quotations of 6¼ to 6½ cents for 7-16-inch and larger. The foregoing prices are obtainable for less than carload lots. Demand shows some improvement.

Paints and Colors.—*Leads.*—There is little of interest to note in the market of White Lead in Oil. The demand is moderate at former prices. Quotations are as follows: In lots of 500 pounds and over, 6¼ cents; in lots of less than 500 pounds, 6¾ cents per pound.

Oils.—*Linseed Oil.*—The unsettled condition of the Linseed Oil market for the past two weeks in a measure foreshadowed the decline in price announced on the 21st inst. City Raw is now quoted at 63 cents per gallon in lots of five barrels or more, and at 64 cents in lots of less than five barrels. State and Western brands remain at 62 cents in lots of five barrels or more.

Spirits Turpentine.—During the week prices of Turpentine stiffened under heavy export demand from the South, and small arrivals at this point. Supplies here increased later, and prices dropped back to last week's quotations of 41 cents for Southern and 41½ cents for machine made barrels. Buyers are not taking large quantities at present figures.

Inter-State Retail Hardware Dealers' Association.

A MEETING of the Executive Committee of the Inter-State Retail Hardware Dealers' Association was held at the Sherman House, Chicago, on September 18. The Michigan, Indiana, Iowa and Illinois associations being represented by delegates. After full consideration of what had been accomplished by this organization since its inception, it was deemed advisable, in view of the present condition of President Z. T. Miller's personal affairs, it being necessary for him to devote his entire time to his Hardware business because of a recent fire, to make arrangements to transfer the detail of the correspondence and the conduct of that part of the association's affairs to a secretary, who should hereafter be intrusted with that branch of the work. Fortunately for the association, the committee was enabled to secure the services of Fred. H. Cozzens of Detroit, Mich., to act in this capacity. Mr. Cozzens is well known to a large number of the members of the Inter-State Retail Hardware Dealers' Association as a man of exceptional experience and ability in this line of work, having been connected with Hardware and other retail mercantile business in Michigan for some years, and at present secretary of the Michigan Hardware Association, as well as of the Business Men's Association of Michigan, the latter organization being composed of several thousands of the retail merchants of that State. Mr. Cozzens is thus peculiarly fitted to assume the duties of secretary of the Inter-State Association.

A number of matters which were pending at the time of President Miller's fire and which are of extreme importance to retail Hardware interests will be at once taken up and completed, and within the very near future a full knowledge of what has been accomplished by the

Inter-State Association thus far will be sent to the various members of the State associations affiliated with it through the new secretary.

The committee feels greatly encouraged at the results of the work undertaken thus far, and with the uniformly courteous and considerate treatment which they have received from the large manufacturing and jobbing concerns with whom they have been in communication, and President Miller is to be congratulated upon the fact that in spite of the handicaps which have prevented his protracted attention to these matters, so much of real importance has been done.

Correspondence.

KINGSTON, ONT., September 20, 1900.

To the Editor: Your issue September 13 contains reference to death of Thos. H. B. Davis.

My memory of him carries me back 30 odd years—to a time I was traveling through the West for Russell & Erwin Mfg. Company, then a very young man. He was one of the best friends I had on the road. He was traveling for the Meriden Britannia Company, and was without exception the most popular traveler of the great many first-class men I met. I was proud to have him my friend. He was as true as steel. Many times since leaving the road have I made inquiry about him of travelers I have met, but your notice of his death is the first intimation I have had of his whereabouts in 30 years. How sad to think of his death at such a comparatively early age.

Doubtless numbers of his old friends will give their testimony of his worth, but none can regret his end more than I.

Yours sincerely,

GEO. SEARS.

Requests for Catalogues, &c.

Bryan Hardware Company of Galveston, Texas, who suffered heavy damage in the recent destructive storm, the details of which are so familiar to our readers, advise us that they would appreciate copies of catalogues, price-lists, &c., from the trade so that they may replenish their stock.

Hardwicke & Etter is the style of a new Hardware firm at Sherman, Texas, who will carry a complete line of everything found in first-class Hardware stores. The firm is composed of Geo. E. Hardwicke and Joe F. Etter. Mr. Hardwicke was one of the officers of the Roberts, Hardwicke & Taylor Company of Sherman, and his experience in the Hardware business dates back 25 years. Mr. Etter was formerly secretary of the Roberts, Hardwicke & Taylor Company and of the Roberts, Sanford & Taylor Company. His connection with the Hardware business has also been sufficient to give him a good experience, covering over 12 years. The firm desired to start in business with as good a store as possible, and placed an order with the J. D. Warren Mfg. Company, Masonic Temple, Chicago, for a fine outfit of the Warren patent shelving to fill both sides and the end of their store room. The new house will be pleased to have manufacturers and jobbers send them catalogues, price-lists, &c.

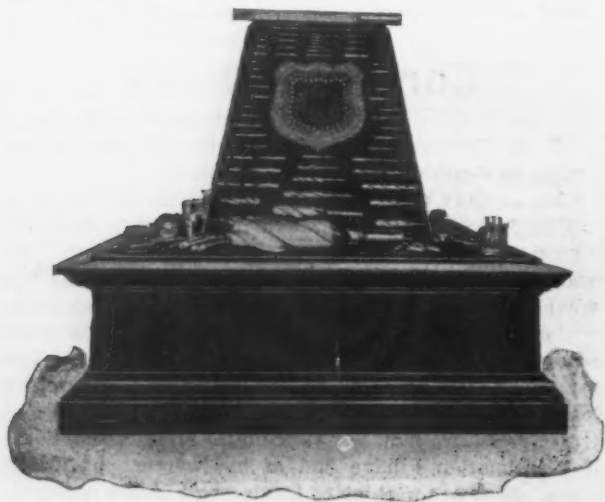
First Annual Automobile Show.

THE first annual Automobile Show will be given in Madison Square Garden, New York City, November 3 to 10, inclusive, commencing and ending on Saturday nights. This exhibition will be held under the auspices of the Automobile Club of America, which, in the main, is the same element which for years has been back of the Horse Show. This industry will be represented by the leading makers of Automobiles, using gasoline, steam and electricity as motive power. The spaces in the amphitheatre and gallery surrounding it have been almost entirely taken, we are advised by the Garden officials, and the management have been compelled to provide additional room on the ground or main floor.

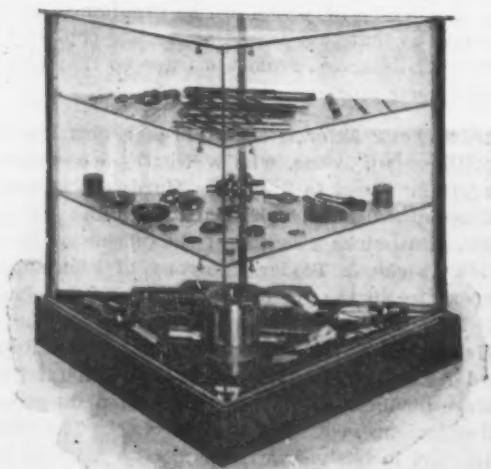
Hardware Exhibits at Paris.—IV.

Standard Tool Company,

Cleveland, Ohio, occupy two cases, in which are shown Tools in great variety, accurately finished for actual work. The large case is pyramidal in form, inclosed in plate glass and resting on a base of rosewood and black marble. On one side of the pyramid the trade-mark of the firm, a shield bearing their name, is worked out in small Tools and surrounded with various sizes of Drills.



On the other sides are displayed Reamers, Arbors, Taps and Milling Cutters. About the base is clustered a variety of Mandrels, Chucks, Drills in sets and large Drills, also many special Tools not ordinarily listed. All of these Tools are made from the highest quality of tool steel, the smallest sizes from Stubs' Wire. The three-cornered case is almost wholly plate glass resting on a



marble base and displays Drills, Milling Cutters and Reamers.

Morse Twist Drill & Machine Company,

New Bedford, Mass., in their exhibit show nearly every tool represented in their 1900 catalogue. In the front small case are Drills and Sockets, showing methods of conveying oil or other lubricants to the point of the Drill. In the left small case are Drills with right and left hand twist; also Chucks and Sockets. The right small case contains a complete line of Reamers. The Three-Groove Chucking Reamers are used for enlarging cored holes. In this case also is a large line of Cutters. The small case in the rear contains Cutting Tools such as Taps, Dies, Screw Plates, &c. Each of these cases represents a department in their plant. In the large case are displayed some of the best products of each department. Special attention is called to the large Drills having oil holes; the Formed Cutters and the Inserted Tooth Cut-

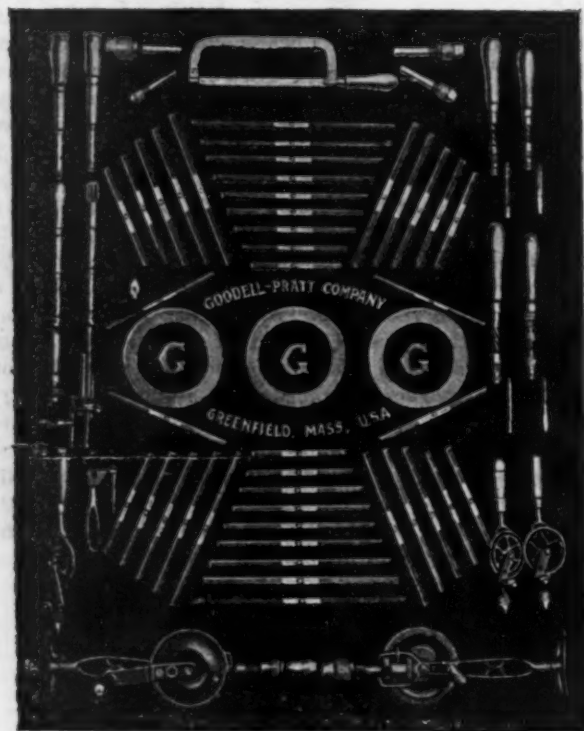
ter. At the rear of the large case is a new tool, a 3-inch Drill with four flutes, which is highly recommended for enlarging holes. The corner pieces contain an assortment of Tools which are largely used in every country. The largest Drill exhibited is 5 inches in diameter, and



the smallest drill No. 80, the diameter of which is 0.0135 inch. All of the Tools displayed are the counterparts of others which have been ordered of this company and previously made for customers.

Goodell-Pratt Company,

Greenfield, Mass., make an exhibit in which special attention has been given to the display of their line of



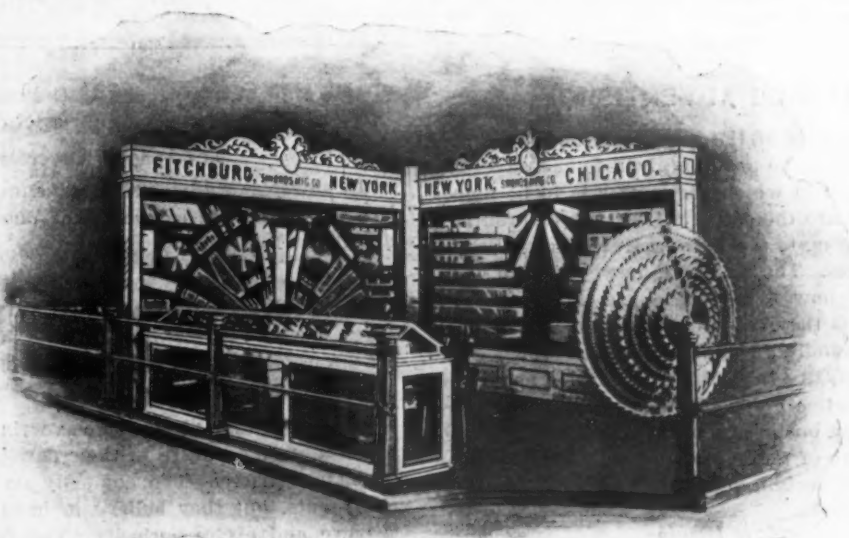
Hack Saw Blades. It also comprises Butchers' Saws, Automatic Drills, Automatic Screw Drivers, Hand and Breast Drills, Roller Gauges, Drill Chucks and Hack Saw Frames.

Simonds Mfg. Company,

Fitchburg, Mass., make a fine display of their extensive line of Saws and Machine Knives in the machinery section, Champ de Mars, which has attracted a good deal of attention. Among the striking features of the exhibit are what is claimed to be the largest Veneer Knife ever made in one piece, its dimensions being 178 x 9 $\frac{1}{4}$ x 1, and a Double Edged Band Saw, said to be the only one in

Up-to-Date Mfg. Company.

UP-TO-DATE MFG. COMPANY, Terre Haute, Ind., manufacture a complete line of Ornamental Wire Fencing, which they sell exclusively to the trade. They produce over 150 designs of Wire and Wire Fencing, prices of which range from 3 cents to \$10 per running foot. They also manufacture many kinds of Fancy Iron Entrances and Gates for parks and cemeteries, besides a large line of Ornamental Iron and Brass Work,

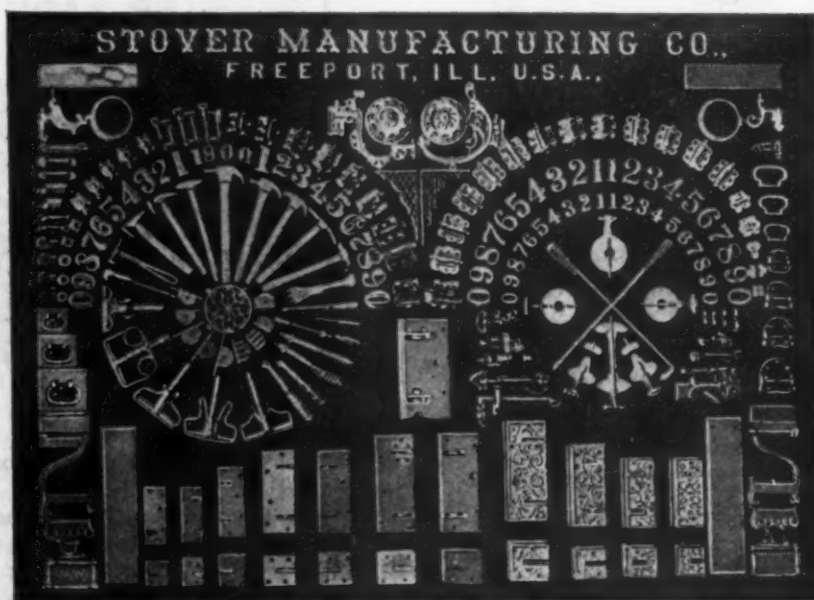


Europe. The company also have an exhibit in the building erected by American manufacturers in the Bois de Vincennes for the exhibition of American machinery in operation.

Stover Mfg. Company,

Freeport, Ill., have thrown two boards into one, and the display consists of what the company's catalogue calls "New Idea Double Acting Spring Hinges" and "Ideal Hardware." They show a large number of varied articles, such as Spring Hinges of the better known patterns,

&c. While the company have been in business in Terre Haute for a comparatively short time the members of the concern have a business experience in this line of over 15 years. Their plant contains about 12,000 square feet of floor space and is equipped with modern machinery. The increase in their business has made it necessary to begin the erection of another building this fall, of the same size, to enable them to meet the demand for their goods. They were recently awarded the contract and received an order to furnish their Combination Wire and Iron Fence for the Central Park in Greytown, Nicaragua, including over 2000 feet of this Fence, and also



Blind Hinges, Sash Pulleys, Thumb Latches, Door Buttons, Pulls, House Numbers, Shelf Brackets, Chest Handles, Harness Hooks, Cast Hammers of the smaller kind, Lamp Brackets, Stove Dampers, Spring Mop Handles, &c.

Andrus-Ferguson Hardware Company have succeeded Andrus Hardware Company in Pueblo, Col. The store has been thoroughly overhauled, and the stock rearranged and materially increased. The company's line embraces Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

one of their handsome Entrances. We are advised that the order was secured in competition with a number of foreign competitors, who bid lower than their prices for the contract, the quality and design of this company's product, however, securing the order. The height of Fence sold in this instance was 4 feet and of a design illustrated in another column of this issue.

E. P. Olmsted has purchased the interest of R. E. K. Mellor in the Hardware, Stove and Farm Implement firm of E. P. Olmsted & Co., Wayne, Neb., and will continue the business under his own name.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

PROFITABLE ADVERTISING

A well defined idea of the amount of newspaper advertising to be done, the position given to the advertisement and the style in which the matter is to be placed before the public are the essential features of profitable advertising according to the Peirson Hardware Company of Pittsfield, Mass. They believe, however, that "the man who knows how to advertise has not been born; the men who think they know how to advertise are born at the rate of a hundred a minute."

SUCCESSFUL LINES.—In looking after the matter of bringing to the notice of people the fact that the company are still doing business, and have interesting things to offer in the way of goods and prices, they have been prompted to follow certain lines which they feel are most successful.

Window Display.

Their show windows are trimmed every week, sometimes oftener, and their best skill is put into the arrangement. They believe that goods talk for themselves, so the most is made of window display.

WORTH ADVERTISING.—It is not left to chance, but public attention is called to the fact that interesting things are to be seen in the show windows. The following advertisement illustrates the manner in which this is done:

Every Thing Just Right

And your choice for 10c.

Look in our south window

And see the variety of things 10c. will buy.

They are not bargain sale or ten cent store goods.

Peirson Hardware Co.

"Right in the Center of the City."

Seasonable Circulars.

Seasonable circulars are frequently mailed, and serve to bring to the attention of the people the fact that the company are alive and that they are handling the latest and best in their line.

SAMPLES.—In the spring, for instance, are mailed Paint color cards, leaflets of Wagon Jacks, Axle Grease, Screens, Lawn Mowers, &c. These are furnished by manufacturers with the retailer's name printed upon them.

MAILING.—One of each of the circulars is put in 200 or 300 paper wrappers, and mailed at the rate of two ounces for 1 cent, thus resulting in an inexpensive way of bringing new goods, &c., to the attention of customers. The company have substantial proofs of the worth

of this kind of advertising in the calls they receive for goods after they have sent out a lot of circulars.

Newspaper Advertising.

In newspaper advertising, advantage is taken of their location and long occupancy of one store by repeated use of the following:

PEIRSON HARDWARE CO.

"Right in the Center of the City."

TRUTHFULNESS.—They endeavor in every instance to be absolutely accurate in their newspaper statements.

ILLUSTRATIONS.—The company do not use a great many cuts, but they believe in head lines that attract the eye and excite curiosity. The following advertisement embodies this feature:

Step Up Ladies and Gentlemen.

You have pictures to hang, windows to wash, curtains to fix, and a

STEP LADDER

fills the bill.

3 Ft.,	37c. each.
4 Ft.,	50c. each.
5 Ft.,	60c. each.
6 Ft.,	75c. each.
7 Ft.,	87c. each.

Peirson Hardware Co.

PERSISTENT EFFORT.—The company's ad. is always in the same place in each paper—on the front page—so that people do not have to search for it. This point is considered of great importance. They advertise every day, as they consider that persistent effort is necessary to success.

CUTTING PRICES.—Goods are not advertised as lower in price than they can be obtained elsewhere, but as better than others offer. Advertising is done to keep in touch with their customers and to fix in their minds the name of the Peirson Hardware Company.

When this is accomplished they have, the company think, struck the key note of advertising.

MODERN METHODS.

Sidney McCoun, Oyster Bay, L. I., has a very attractive store in a comparatively new building, 25 feet front by 70 feet in depth, two stories high, the upper floor being used largely as a showroom. Leonard M. Hicks is the efficient manager of the business.

CASH CUSTOMERS CULTIVATED.—The cash customer is

industriously cultivated and sought after, great caution being exercised in granting credit, there being a decided preference in the direction of less profit to cash buyers.

HIGHWAY MUSLIN SIGNS.—For a distance of about 7 miles in different directions in the vicinity of Oyster Bay, signs printed on strong unbleached muslin, 18 x 11 inches, are tacked up in appropriate places, as here reproduced:

GO TO MCGOUN'S 5 & 10 CENT STORE.

Tinware. Hardware. Crocery. Glassware.	LOWEST PRICES. ROCHESTER SPRAYER.	Bicycles. Harness. Farming Implements.
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HORSE SHOEING AND CARRIAGE REPAIRING.

AUDREY AVENUE, OYSTER BAY, L. I.

POSTAL CARD ANNOUNCEMENTS.—Another resource is sending out large numbers of printed postal cards, sometimes embellished with an engraving, sometimes not, according to the character of the announcement. This is done usually as often as once a month, the matter on the card calling attention to various features of the business.

THE OWL HARDWARE COMPANY'S UNIQUE CARD.

The Owl Hardware Company of Brazil, Ind., think the photograph, which is shown reduced in size in the accompanying cut, the best advertising device they have



The Owl Hardware Company's Unique Card.

ever tried. It will be noticed that a large number of Hardware articles are included in the picture. Picking out and giving the correct name to each would doubtless afford much entertainment for a customer and his family.

The photographs have not been given away promiscuously, but only where it was thought they would do the most good. In every instance, the company state, where they have presented the picture the recipient has expressed his satisfaction with it and his intention of taking it home and keeping it.

QUARTERLY CIRCULARS.

E. N. Howell Hardware Company, Dixon, Ill., issue what they term circulars, of spring, summer, fall and winter goods. The circulars contain four pages, newspaper size, which are replete with illustrations of goods

and prices. As the out-of-town territory cannot be very well covered by newspaper advertising, the circulars are mailed to 3300 country addresses. The town people are reached by having the circulars folded in the two daily papers.

NEWSPAPER ADVERTISING.—In addition to the circulars, the company have regular space in six of their county papers, and try to change the matter each issue, although they do not always have time to do so.

BOOKLETS.—They make use of booklets furnished by manufacturers, by putting copies in each package that leaves their store.

CONFIDENCE.—They have the utmost faith in advertising, and believe that the Hardwareman can sell any kind of reliable goods by means of it, besides securing business that can be obtained in no other way.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Warranting Edge Tools.

Referring to the request of an Illinois Hardware merchant for information relating to warranting Edge Tools, particularly Hatchets, which appeared in the issue of *The Iron Age* of September 13, a Wisconsin merchant writes as follows:

In *The Iron Age* of September 13 an Illinois Hardwareman complained that his Hatchets were returned, broken in the eye. When a workman strikes with a Hatchet flat on a hard piece of wood or other hard object it is apt to break the tool at the eye. Several years ago I had several Axes returned by one man, at different times, all broken in this way. At last I found that the man used the Axes for some time, then broke them purposely by striking them on the flat side against a piece of hard wood, on cold, frosty mornings. He would then return the Axe and get a new one. I keep good tools and sell them reasonably, but don't warrant them, and have more friends than if I warranted Axes and Hatchets.

F. E. Myers & Bro.'s Catalogue.

F. E. MYERS & BRO., Ashland, Ohio, have just issued illustrated catalogue No. 35, containing 323 pages, showing complete lines of Pumps, Hay Tools and Specialties, which they allude to as the finest trade catalogue they have ever issued. In it are described Double Acting Force and Lift, Hand, Wind Mill and Power Pumps, Hydraulic, Barrel and Bucket Spray Pumps, Atomizers, Cylinders, Pipe, Hose and Fixtures. Haying Tools include Hay Carriers, Hay Forks, Steel Track, Pulleys, Slings, &c., together with lines of Store Ladders, Bicycle Stands and Door and Coat Hangers.

Price-Lists, Circulars, &c.

ECLIPSE MFG. COMPANY, Elmira, N. Y.: The *Morrow Coaster and Brake*. In the fourth annual catalogue relating to this Coaster and Brake, issued by the company, they explain and illustrate the workings of the Brake in detail, to enable riders and dealers to understand the construction of the Brake and its mechanism. It is explained that the Brake is made from superior quality of steel and that each part is tempered and worked in such a way as to perform enduring and trying work, and put together harmoniously to work as a unit.

LAWRENCE BROTHERS, Sterling, Ill.: Catalogue of Barn and Parlor Door Hangers, Wrought Steel Butts, Strap and T Hinges and other Hardware. This catalogue shows a number of additions to the line given in former catalogues. The firm are not only making Common Strap and T Hinges, but have also begun the manufacture of Butt Hinges, and will add new sizes and styles as fast as they can make the necessary dies. They are also making another line of the Lawrence patent Strap Hinges, which are referred to as somewhat lighter

and lower in price than the older pattern, yet are double the strength of corresponding sizes of Common Strap Hinges.

A. J. HARWI HARDWARE COMPANY, Atchison, Kan.: Catalogue of fall and winter goods, devoted to seasonable Hardware, Sporting Goods, &c.

BINDLEY HARDWARE COMPANY, Pittsburgh, Pa., have just issued their fall and winter catalogue, in which are illustrated and described season goods, including Gas Stoves and Accessories, Oil Heaters, Ranges, Coal Vases, Fire Iron Stands and goods of this general character, together with Lanterns and a large variety of House Furnishing Goods and Kitchen Utensils.

DETROIT WIRE & IRON WORKS, Detroit, Mich.: Folder devoted to Flower Stands, Window Guards, Barrel Covers, Bank Railing, Electric Light Guards, Ash Sifters, Coal Screens, Wire Fenders, French Rat and Mouse Traps, &c.

Trade Items.

H. J. BANTA has accepted a position as superintendent of agencies with the Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., succeeding L. C. Osborne, resigned. Mr. Banta is well known in the trade, having been connected with the Remington Arms Company, and more latterly with the Waltham Mfg. Company.

J. S. CONWELL, who has for some time been general manager of the American Bicycle Company, Waverley Factory, Indianapolis, Ind., has been elected president and general manager of the Wilke Mfg. Company, manufacturers of Porcelain Refrigerators, Anderson, Ind. He will take sole charge of the office on October 1. About that time the company expect to have a new catalogue ready for distribution.

THE OGDEN MFG. COMPANY, Newark, N. J., manufacturers of the Ogden Automatically Regulated Door Check, which is advertised in this issue, and for whom W. H. Quinn & Co., 103 Chambers street, New York, are the general agents, advise us that their Checks are being used by many large contractors in office buildings in this city as well as in other large cities. Among the buildings in which they are already in use may be mentioned the Broadway Chambers, corner of Broadway and Chambers street, New York, and the Prudential Life Building, Newark, N. J. This Check is specified by the Building Department of the Board of Education for use in New York public schools, they also being exclusively used in the public schools of Newark. The Check has also been recently accepted by the United States Government, and 100 have been ordered for the new Immigrant Building approaching completion on Ellis Island, in New York harbor.

THE well-known firm of Pope & Stevens, 114 Chambers street, New York, dealers in Dog Collars and Furnishings and Ice Skates, have been succeeded by the firm of Walter B. Stevens & Son. The only real change is the giving of a business interest by Mr. Stevens to his son, Mr. Pope having been dead many years.

RUSSELL, BURDELL & WARD, Portchester, N. Y., old and prominent manufacturers of Bolts and Nuts, have recently enlarged their producing facilities and are in a position to execute promptly any orders for goods of their manufacture.

Among the Hardware Trade.

F. P. Tepoorten & Co., formerly of Bay City, Mich., are now located at West Superior.

C. P. Bigley has succeeded Amos Bigley in the Hardware business at Rising Sun, Ohio.

S. J. Nowell will open up in the Hardware, Agricultural Implement and Paints and Oils business, at Sanford, Maine, on October 1.

H. K. Blair, Anthon, Iowa, has disposed of his Hardware, Stove, Tinware and Sheet Metal business to C. W. Flude, a tinner of long experience, formerly in business at Pierson, Iowa. Mr. Flude has added to the stock so as to make it complete in every department.

H. E. Graham has disposed of his Hardware, Stove and Agricultural Implement business at Naples, N. Y., to J. Bolles & Son, who will continue at the old stand.

The Hardware stock of Miller & Wentworth, Unionville, Mo., was partly damaged by fire a short time since. The loss was fully covered by insurance.

A. Slob has succeeded Hulstein & Slob in the general Farm Machinery line at Sioux Center, Iowa.

Louis Keller has disposed of his business in Cuero, Texas, to Keller & Co., who will continue at the old stand.

The Hardware and Vehicle firm of Diggs & Co., Woodland, Cal., have been succeeded by M. Diggs.

E. T. Ijams has sold his interest in the Olney-Ijams Hardware Company, Safford, Ariz., to Geo. A. Olney, but the firm style continues unchanged. The business is both wholesale and retail, and covers all kinds of Hardware and Farm Implements.

Isaac A. Brown has succeeded Galey & Co., Hardware and Stove merchants, Monon, Ind.

Snyder & Murphy are successors to Campbell & Snyder in the retail Hardware, Stove, Tinware, Agricultural Implement and Sporting Goods business in Linden, Ind.

Pearson Hardware House have succeeded C. M. Dobbins & Co., Bedford, Ind., retailers of General Hardware, Stoves and Agricultural Implements.

The Fowler Hardware Company have succeeded Fowler & McKee, Cashion, O. T.

D. H. Hatter has succeeded McClanahan Bros. in the general Hardware line in Franklin, Ky.

F. L. Chambers, Hardware, Stove and Farm Implement merchant, Eugene, Ore., is enlarging his building by the addition of another story.

Loewenstein & Sons, jobbers of Hardware, Sadlery, &c., Charleston, W. Va., are erecting for their own use a building which will be 50 x 125 feet, six stories high. Its location is about opposite their present quarters. The building will be modern both in construction and arrangement. The territory covered by this house embraces the States of Virginia and West Virginia.

Bradley & White have purchased the Hardware, Stove and Sporting Goods business formerly conducted by A. J. McMahan & Son, Anthon, Iowa. The new firm have overhauled the store, making it more attractive and convenient than heretofore.

B. S. Lewis has succeeded Foster & Lewis in the retail Hardware, Stove and Athletic Goods business in Gladwin, Mich.

W. H. Menk & Son have succeeded S. C. Mitchell, Paw Paw, Ill., dealer in Shelf and Heavy Hardware, Stoves, Plumbing Goods, Furnaces, &c. The Messrs. Menk have combined their stock with that formerly carried by Mr. Mitchell and moved into his store, which was subjected to a general renovation.

A. L. Smith is successor to Heaton & Smith, Hardware dealers, Central City, Iowa.

The Hardware store of C. Wanless & Co., Salt Lake City, Utah, was lately robbed of \$60 worth of goods.

Nelson & Bouquet Hardware Company, Owatonna, Minn., have lately been incorporated, and will conduct a wholesale business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c. They will also have a retail department. The company have put three men on the road, and will cover Southern Minnesota and Northern Iowa.

H. & H. Hardware Company have commenced business at Grangeville, Idaho, wholesale and retail, principally the latter.

McKinney & Sewell have lately opened up a new stock at Van Alstyne, Texas, carrying Shelf and Heavy Hardware, Stoves, Sporting Goods, &c.

The Parsons Lumber & Hardware Company, Farmington, Conn., have been incorporated with a capital stock of \$16,000. The incorporators are John S. Parsons, Luke A. Parsons and Daniel Mason. The company will retail Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Building Materials, &c.

Albert H. McKnight has succeeded W. B. Allen in the Hardware, Stove and Agricultural Implement business in Springfield, Neb.

French & Hansen have succeeded G. W. Paris & Son, Harlan, Iowa, dealers in Shelf and Heavy Hardware. The new firm expect to move into new quarters in the near future.

Peters & Hardin are successors to Hans Peters, Jr., Gretna, Neb., in the Hardware and Stove business.

Miscellaneous Notes.

Regal Enameled Ware.

A new line of enameled ware is being placed upon the market by the Lalance & Grosjean Mfg. Company, 19-21 Cliff street, New York, under the name of Regal, of which a full line of staple goods is being made. The new ware is different from other enameled ware. It is of excellent finish and coloring and is ornamental. It is made in a dark blue and white, and green and white, with mottled effect, and is especially adapted for such articles as tea and coffee pots, pitchers and other utensils in which an attractive appearance is more particularly desirable.

Match Stands and Towel Bars.

Searls Mfg. Company, Newark, N. J., whose direct representative is Frederick Klages, 127 Duane street, New York, have recently added to their large line of bathroom fixtures a number of articles new to them. Among them are spun brass and nickel plated safety match stands, both for large and small match boxes, with circular trays at the bottom for receiving cigar ashes, burnt matches, &c., there being several varieties of this style. Another article of like character is a new design of nickel plated brass match holder and cigar rest combined, designed to hold either safety or parlor matches. The cigar holder is formed by giving the bottom of the back plate a half turn outward and upward. They also have a locking towel bar for roller towels by means of which thieving is prevented. The ornamental posts which hold the bar extend 3 inches from the wall. The bar has a beveled cut at one end and a threaded rod which runs the length of the hollow bar, articulating with the other end, which is also threaded and practically serves as a nut. By this means the rod can be separated, the towel slipped on, and locked in place by means of a square hole key which operates the rod at one end of the bar, the beveled joint being concealed by one of the brackets.

Thor Poller Bearings for Automobiles.

Brandenburg Bros. & Wallace, 56 Reade street, New York, who are the exclusive selling agents of the Aurora Automatic Machinery Company, Aurora, Ill., are introducing the Thor roller bearing in connection with automobiles and carriages. This bearing system, which has been illustrated in these columns in connection with bicycle work, will carry an automobile of heavy weight successfully where balls, it is stated, will crush and cut the cups and cones to pieces. The bearing runs easily under heavy loads, there being no wedging as in the point of contact of a ball bearing. The lubrication requires very little attention. This bearing is suitable for sulkies, carriages, speed wagons, automobiles, and other vehicles of kindred character.

Glass Towel Shelves.

Searls Mfg. Company, Newark, N. J., for whom Frederick Klages, 127 Duane street, New York, is selling agent, have recently put on the market a series of glass towel shelves, one form of which is here illustrated. They are made in three styles and two sizes. One of them has a glass bar and the other a nickel plated bar



Glass Towel Shelf.

on which to hang roller towels, the third pattern having no bar at all. The glass shelves are made in two lengths; 27 and 33 inches long. They are made of polished French plate, $\frac{1}{2}$ inch thick and 5 inches wide, with rounded corners and slightly beveled top and bottom edges. The brackets are nickel plated cast brass, the outward end of both being formed with an inwardly projecting clip which holds the glass shelf securely in place, the shelf having a slight overhang of about 1-16

inch at the back, so that when the brackets are screwed to place the shelf is held firmly without the necessity of any screws vertically through the glass into the brackets, thus largely obviating the risk of breakage. These shelves are highly ornamental and suitable for fine work in hotels, clubs, restaurants and similar places.

The Keystone Vehicle Jack.

The accompanying cut illustrates a vehicle jack offered by P. C. Morrow, Newport, Pa. The jack is composed of three pieces, in the construction of which, it is explained, there are no bolts, pins, screws, awkward angles, projecting pieces, rods or gears. It is provided with a handle to carry it by, and a lever handle with a comfortably shaped grip. In operation the slide is held up with the left hand with the step under an axle. By

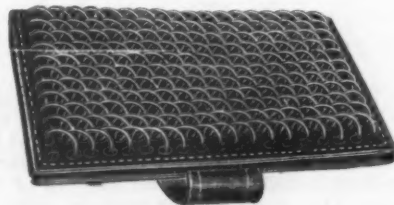


The Keystone Vehicle Jack.

pushing down on the lever with the right hand the lever engages the nearest tooth and raises the slide the right height to free the wheel from the ground. It is stated that the mechanism works smoothly and that no amount of weight can cause the slide to slip down until the lever is moved again. The manufacturer recommends the jack for use on buggies, carriages, wagons, automobiles and vehicles of every description, and remarks that it will fit any height of axle, that it is instantly adjustable, that it raises the axle just the right height and that it locks automatically.

The New Idea Curry Comb.

The Arcade Mfg. Company, Freeport, Ill., are offering the curry comb herewith shown. It is made with flexible leather back, having coiled steel wire strung through it to insure a flexible construction. Its flexibility causes it to partially wrap about an animal's limbs or

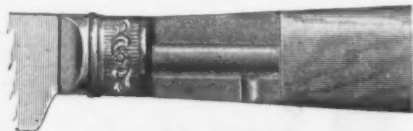


The New Idea Curry Comb.

any joint, cleaning, it is explained, every part quickly without irritation. The oval projections of the wire-coils are referred to as having ample penetrating power for removing scaly collections and dirt without injuring the animal's skin. The construction of the comb is alluded to as being such that it is practically a combined comb and brush. It is characterized by the manufacturers as a humane curry comb, inasmuch as it curries without the possibility of abrading or irritating the skin. The comb is made in two styles—No. 1 with russet colored leather, and No. 2 with patent leather.

The Four Hundred Line of Cutlery.

The accompanying cut illustrates the manner of fastening the tangs of knives and forks in handles embodied in the Four Hundred line of table cutlery offered by the Goodell Company, Antrim, N. H., New York office, 10 Warren street. In manufacture the handle is bored in the usual manner to receive the tang of the knife or fork, and at a suitable point on the lower side of the handle a transverse opening is bored, half way through, to intersect. The parts are then placed in position, and into the transverse opening hot metal is forced under pressure. The composition of the metal is such, it is explained, that it unites with the tang and bolster, forming a solid connection, at the same time filling the hollows of the handle and rigidly locking all parts in a per-

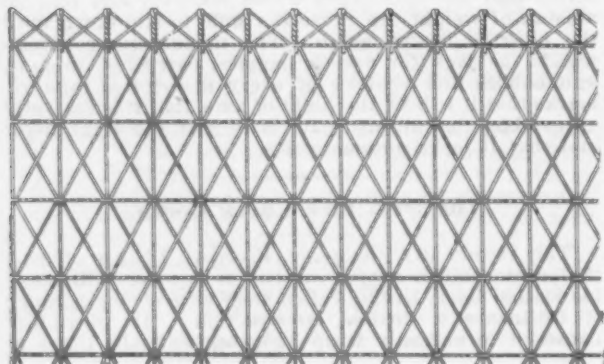


The Four Hundred Line of Cutlery.

manent fastening which can only be ruptured by the application of force sufficient to entirely destroy the knife or fork. The metal, it is stated, does not shrink or swell in cooling nor under subsequent influence of hot water, hence there is no splitting of handles. As seen in the cut, the composition shows only on the lower portion of the handle, where it has the appearance of a rivet. The durability of the goods is guaranteed by the manufacturers, who state that the handling of the line by dealers will be free from annoying complaints. The line includes eight styles of handles. The knives have nickel plated bolster with polished and burnished blades. The forks are four tined, full nickel plate.

Wire Picket Fence.

Up-To-Date Mfg. Company, Terre Haute, Ind., are manufacturing the No. 14 wire picket fence, here illustrated. Pickets in this fence are made of No. 8 or No. 9 galvanized wire, according to the requirements of the buyer. The line or tension wires are made of two No. 12 wires twisted together with right and left twist to provide for contraction and expansion. The newest feature of this fence is the upright picket which wraps



Steel Wire Fencing No. 14.

around the top of the other pickets. This picket is made of No. 8 wire and wrapped twice around the top of the other picket and then twisted down to the first line wire. This makes the upright picket $\frac{3}{8}$ inch in diameter at the top, and makes it difficult to bend the top of the fence out of shape. This fence can be used on either wood or steel posts. It can be had in 18, 24, 30, 36, 42 and 48 inch heights in both No. 8 and No. 9 galvanized wire, made in any size rolls up to 400 feet in length. When steel posts are used they furnish them of an angle pattern, which are set in the ground with the anchor on the bottom and heavy breast plates near the top of the ground, making them, it is said, first class in every respect.

The Electric Wheel Company, Quincy, Ill., manufacture an extensive line of Solid Metal Wheels and Farmers' Handy Wagons, for which latter they furnish the complete running gear. They are prepared to furnish Metal Wheels of all diameters and width of tread.

Their plant is well equipped, and a large stock is carried for prompt filling of orders.

Victor Breuille, Washington, La., has taken possession of new quarters, larger and better adapted to the requirements of his business than the old. Mr. Breuille carries a varied line of goods, including Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Carriage Makers' and Blacksmith's Supplies, Engines, Boilers, Cane Mills, Evaporators, &c.

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Current Hardware Prices.

REVISED SEPTEMBER 25, 1900.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Adjusters Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00...33 $\frac{1}{2}$ @33 $\frac{1}{2}$ @10%
North's... $\frac{1}{2}$ doz. \$3.00...33 $\frac{1}{2}$ @33 $\frac{1}{2}$ @10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent...25 $\frac{1}{2}$ @25 $\frac{1}{2}$ @10%
Taplin's Perfection...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Ammunition—See Caps, Cartridges, Shells, etc.

Anvils—American—

Eagle Anvils... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Hay-Budden, Wrought... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Horseshoe brand, Wrought... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Samson... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Trenton, Wrought... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Buel Pat. Trenton Wrought... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Vulcan Wrought... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%

Imported—

Armitage's Mouse Hole... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%
Peter Wright's... $\frac{1}{2}$ doz. \$7.50@7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @10%

Anvil, Vise and Drill—

Millers Falls Co., \$18.00...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Apple Parers—See Parers, Apples, etc.

Aprons, Blacksmiths—

Hull & Hoyt Co.:
Lots of 1 doz...25 $\frac{1}{2}$ @25 $\frac{1}{2}$ @10%
Small or Lots...20 $\frac{1}{2}$ @20 $\frac{1}{2}$ @10%
Lots of 3 doz...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Augers and Bits—

Common Double Spur...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
Boring Machine Augers...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Car Bits, 12-in. twist...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Jennings' Pattern:
Auger Bits...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Ford's Auger and Car Bits...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Forster Pat. Auger Bits...20 $\frac{1}{2}$ @20 $\frac{1}{2}$ @10@30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

C. E. Jennings & Co.:
No. 10 Extra Lip R. Jennings' list...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

No. 80, R. Jennings' list...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Russell Jennings...25 $\frac{1}{2}$ @25 $\frac{1}{2}$ @10@30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

L'Hommedieu Car Bits...10 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10@15 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10%

Pugh's Black...20 $\frac{1}{2}$ @20 $\frac{1}{2}$ @10@30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Pugh's Jennings' Pattern...35 $\frac{1}{2}$ @35 $\frac{1}{2}$ @10@45 $\frac{1}{2}$ @45 $\frac{1}{2}$ @10%

Snell's Auger Bits...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Snell's Bell Hangers' Bits...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Snell's Car Bits, 12-in. twist...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Wright's Jennings Bits (R. Jennings list)...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Bit Stock Drills—

Standard List...65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10@75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%

Expansive Bits—

Clark's small, \$18; large, \$26...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Lavigne's Clark's Pattern, No. 1, $\frac{1}{2}$ doz., \$26; No. 2, \$18...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

C. E. Jennings & Co., Steer's Pat...35 $\frac{1}{2}$ @35 $\frac{1}{2}$ @10@45 $\frac{1}{2}$ @45 $\frac{1}{2}$ @10%

Swan's...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Glimet Bits—

Common Double Cut, gro. \$2.75 to \$3.25
German Pattern, gro. \$5.00 to \$5.50
Double Cut, makers' lists...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Hollow Augers—

Ames...25 $\frac{1}{2}$ @25 $\frac{1}{2}$ @10@30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Honey's Adjustable, $\frac{1}{2}$ doz...16.00@16.00@10%

New Patent...35 $\frac{1}{2}$ @35 $\frac{1}{2}$ @10@45 $\frac{1}{2}$ @45 $\frac{1}{2}$ @10%

Universal...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10@40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%

Ship Augers and Bits—

Ford's...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Saell's...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

C. E. Jennings & Co.:
L'Hommedieu's...15 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10@20 $\frac{1}{2}$ @20 $\frac{1}{2}$ @10%

Watrous...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled...gro. \$2.75 to \$3.10
Unhandled, Shouldered, gro. \$3.00 to \$3.30
Unhandled, Patent...gro. \$3.00 to \$3.30

Peg Awls:
Unhandled, Patent...gro. \$1.00 to \$1.30
Unhandled, Shouldered, gro. \$1.00 to \$1.30

Scratch Awls:
Handled, Common, gro. \$2.50 to \$3.00
Handled, Socket, gro. \$1.50 to \$2.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes

First Quality, best brands...\$6.25 to \$6.50
First Quality, other brands...\$6.00 to \$6.25
Jobbers' Special Brands:
Good Quality...\$6.00 to \$6.50
Best Quality...\$6.25

Cheap, Handled Axes...\$5.50 to \$5.75
Beveled, add 25c doz.

Axle Grease—See Grease, Axle.

Axles—

Concord, Loose Collar...5 c
Concord, Solid Collar...5 $\frac{1}{2}$ c
No. 1 Common...3 $\frac{1}{2}$ c
No. 1 $\frac{1}{2}$ Com. New Style...4 $\frac{1}{2}$ c
No. 2, Solid Collar...4 $\frac{1}{2}$ c
Nos. 7, 8, 11 to 14...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
Nos. 15 to 18...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Nos. 19 to 22...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Iron or Steel.
\$4 each 10 days.

Boxes, Axle—

Common and Concord, not turned...15. 50
Common and Concord, turned...15. 50
Half Patent...15. 50

Balances—

Sash—
Caldwell new list...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Pottman's...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Spring—
Spring Balances...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Chattillon's Light Spg. Balances...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%
Chattillon's Straight Balances...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%
Chattillon's Circular Balances...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Chattillon's Large Dial...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%
Pottman's...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Barb Wire—See Wire, Barb.

Bars—Crow—
Steel Crowbars, 10 to 14 lb., per lb...3 $\frac{1}{2}$ @3 $\frac{1}{2}$ @10%

Beams, Scale—
Scale Beams, List Jan. 12, '92...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%
Chattillon's No. 1...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%
Chattillon's No. 2...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%

Beaters—Egg—
Standard Co.:
No. 5 Steel Handle Dover...\$ gro. \$0.50
No. 10 Cast Handle Dover...\$ gro. \$0.80
No. 10 Steel Handle Dover...\$ gro. \$0.80
No. 15 Extra Heavy Steel Handle...\$ gro. \$1.50
Rival, \$ gro. \$1.00
Tadlin Mfg. Co.:
No. 50 Small Family size...\$3.50
No. 100 Regular Family size...\$3.50
No. 102 Regular Family size, tinned...\$9.50
No. 150 Large Family size...\$15.00
No. 152 Large Family size, tinned...\$17.00
Lyon's, Standard size...\$ doz. \$1.75
Wooler (S. S. & Co.)...\$ gro. \$7.50

Belows—
Blacksmith, Standard List...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
C. E. Jennings & Co., Blacksmith...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
C. E. Jennings & Co., Hand...35 $\frac{1}{2}$ @35 $\frac{1}{2}$ @10%

Blacksmiths—
Inch...\$ 30 32 34 36 38 40
Each...\$3.70 3.95 4.25 4.50 4.75 5.00
Extra Length:
Each...\$4.25 4.50 4.75 5.00 5.25 5.50 5.75 6.00 6.25 6.50

Molders—
Inch... 9 10 11 12 13 14 15
Doz...\$6.75 7.25 7.50 7.75 8.00 8.25 8.50

Hand—
Inch... 6 7 8 9 10 12
Doz...\$3.75 4.25 4.50 4.75 5.00 5.25 5.50

Bells—Cow—
Ordinary goods...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
High grade...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
Jersey...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
Texas Star...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Door—
Abbe's Gong...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%
Barton Gong...55 $\frac{1}{2}$ @55 $\frac{1}{2}$ @10%
Gong, Yankee...55 $\frac{1}{2}$ @55 $\frac{1}{2}$ @10%
Home, R. & E. Mfg. Co.'s...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Lever and Pull, Sargent's...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%

Hand Bells, Polished...65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10%
White Metal...65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10%
Nickel Plated...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Stainless Steel...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Silver Chrome...55 $\frac{1}{2}$ @55 $\frac{1}{2}$ @10%

Miscellaneous—
Farm Bells...10. 25
Steel Alloy Church and School...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Wilnot & Hobbs Mfg. Co., Gongs...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Belting Rubber—
Common Standard...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
Standard...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Extra...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
High Grade...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Leather—
Extra Heavy, Short Lap...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Regular Short Lap...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Standard...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10%
Light Standard...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Cotton—
Rossendale-Rodaway B. & H. Co.:
Sphinx Brand...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Durable Brand...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters...20 $\frac{1}{2}$ @20 $\frac{1}{2}$ @10%
Stoddard's Lightning Tire Upsetters...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10%

Bicycle Goods—
John S. Lang's Son's 1899 list:
Chain...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Parts...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Spokes...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Tub...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Bits—
Auger, Glimet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—Tackle—
Common Wooden...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%
Clove and Steel...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Eddy's Steel...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Hartz Steel...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Ford's Star Brand Self Lubricating...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%
Hollow Steel, Ford's Pat. Star Brand...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
Lane's Patent Automatic Lock and Junior...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%
Stowell's Novelty, Mal. Iron...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Boils—
Carriage, Machine &c.—
Common, list Jan. 30, '95...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10@75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
Norway Iron, \$3.00, list Oct. 7, '94...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10@80 $\frac{1}{2}$ @80 $\frac{1}{2}$ @10%
Phila. Eagle, \$3.00 list May 24, '99...30 $\frac{1}{2}$ @30 $\frac{1}{2}$ @10%
Bolt Ends, list Jan. 30, '95...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10@75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
Machine, list Oct. 1, '99...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10@80 $\frac{1}{2}$ @80 $\frac{1}{2}$ @10%

NOTE.—Jobbers' prices on Boils are now often lower than manufacturers', and the market is irregular.

Door and Shutter—
Cast Iron Barrel, Round Brass Knob:
Inch... 3 4 5 6 8
Per doz...\$0.35 36 38 40 42 44

Cast Iron Spring Foot:
Inch... 6 8 10
Per doz...\$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:
Inch... 6 8 10
Per doz...\$0.35 36 38 40 42 44

Cast Iron Shutter, Brass Knobs:
Inch... 6 8 10
Per doz...\$0.80 90 1.15

Wrought Barrel Brass Knob:
Inch... 3 4 5 6 8
Per doz...\$0.44 50 51 52 53 54

Wrought Barrel...70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10@75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%

Wrought...10 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10@15 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10%

Wrought Flush, B. K...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Wrought Shutter...40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @10@50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10%

Wrought Square Neck...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Wrought Sunk...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Ives' Patent Door...60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

Stove and Plow—
Plow...50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10@60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10%

Stove...67 $\frac{1}{2}$ @67 $\frac{1}{2}$ @10%

Tire—
Common...65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10@70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10%

American Screw Company:
Norway Phila., list Oct. 16, '94...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
Eagle Phila., list Oct. 16, '94...77 $\frac{1}{2}$ @77 $\frac{1}{2}$ @10%
Bay State, list Dec. 28, '99...65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10%

Franklin Moore Co.:
Norway Phila., list Oct. 16, '94...75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10%
Eagle Phil

Glimlets—

Nail, Metal, Assorted, gro. \$1.10@1.75
Spike, Metal, Assorted, gro. \$3.00@3.50
Nail, Wood Handled, Assorted,
gro. \$1.00@1.25
Spike, Wood Handled, Assorted,
gro. \$5.00@5.25

Glass, American Window

List Jan 1, 1898.

Small lots from store:
Single, Eastern,85¢
First Bracket,85¢
Second and Third Brackets, 85¢@10¢
Eastern, All Other Brackets, 85¢@25¢
Double, Eastern,85¢
First Bracket,85¢
Second, Third, Fourth and Fifth
Brackets,85¢@10¢
All Other Brackets,85¢@20¢
From Jobbers or Factory, with Freight
Allowance, except in Eastern dis-
trict:
Carloads, Single Strength,85¢@25¢
First Bracket,85¢@25¢
Second and Third Brackets,85¢
All Above,90¢@5¢
Carloads, Double Strength
First Five Brackets,85¢
60 inch Bracket,90¢
70 to 100 inch Bracket, inclusive
90¢@10¢@5¢
All Above,90¢@20¢

Glue—Liquid, Fish—

Last A, Bottles or Cans, with Brush,75¢@50¢
List B, Cans (½ pts., pts., qts.),55¢@45¢
List C, Cans (½ gal., gal.),55¢@45¢

Glue Pots—See Pots, Glue.**Grease, Axle—**

Common Grade,gro. \$5.00@6.00
Dixon's Everlasting, 10-lb pails, ea. 85¢
Bixon's Everlasting, in bxs., 1 doz. 1 lb
\$1.20; 2 doz. \$2.00
Snow Flake:
1 qt. cans, per doz. \$2.00; 2 qt., \$3.30;
1 gal. cans per doz. \$6.00; 3 gal.,
\$16.00; 6 gal. \$24.00

Grindstone Fixtures—

See Fixtures, Grindstones.

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel #1000,\$9.00
Copper #1000,\$18.00

Gun Powder—See Powder.**Hack Saws—See Saws.****Hacks, Axl—**

Peg Patent, Leather Top,\$4.90@5.25
Peg Patent, Plain Top,\$3.50@3.75
Sewing, Brass Ferrule,\$1.50@1.60
Saddlers', Brass Ferrule,\$1.35@1.45
Peg, Common,\$1.25@1.35
Brad, Common,\$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web,45¢@25¢
Covert Mfg. Co., Jute Rope,45¢@25¢
Covert Mfg. Co., Sisal Rope,30¢@25¢
Covert's Saddlery Works, 90 list, W.-B.,
60¢@10¢
Covert's Saddlery Works, Leather, 80¢@10¢
Covert's Saddlery Works, Jute,60¢@25¢
Covert's Saddlery Works, Sisal,60¢
Covert's Saddlery Works, Manila, 60¢@5¢
Covert's Saddlery Works, Cotton,70¢

Hammers—**Handled Hammers—**

Heller's Machinists',50¢@50¢@5¢
Heller's Farriers',50¢@50¢@5¢
Magnetic Tack, Nos. 1, 2, 3, \$1.35, \$1.50,
\$1.75,40¢@10¢
Pess, Stow & Wilcox,40¢@40¢@5¢
Fayette It. Plumb:
Plumb, A. E. Nail,33¢@10¢@25¢
Engineers' and B. S. Hand,60¢@75¢
Machinists' Hammers,60¢@75¢
Riveting and Liners',50¢
Sargent's C. S. New List,45¢@10¢

Heavy Hammers and**Sledges—**

3 lb. and under,lb. 15¢
3 to 5 lb.lb. 30¢
Over 5 lb.lb. 30¢
Wilson's Smitis,95¢@10¢ lb.

Handcuffs and Leg Irons

See Police Goods.

Handles—

Agricultural Tool Handles—
Hoe Rake, Fork, etc.,60¢@60¢@10¢
Shovel, etc., Wood D Handle, 50¢@5¢
Cross-Cut Saw Handles—
Atkins,40¢@5¢
Champion,45¢@45¢@10¢
Dixon,50¢

Mechanics' Tool Handles—

Auger, assorted,gro. \$2.10@2.60
Auger, large,gro. \$2.85@3.30
Brad Axl,gro. \$1.50@1.75
Chisel Handles:
Apple Tanged Firmer, gro. ass'd,
\$2.25@2.35; large, \$3.50@3.60.
Hickory Tanged Firmer, gro. ass'd,
\$1.75@1.85; large, \$2.35@2.50.
Apple Tanged Firmer, gro. ass'd,
\$1.75@1.85; large, \$2.00@2.25.
Hickory Tanged Firmer, gro. ass'd,
\$1.75@1.85; large, \$2.00@2.25.
Framing, gro. ass'd,
\$2.50@2.60; large, \$3.50@3.60.
File, assorted,gro. \$1.00@1.15
Hammer,\$1.00@1.15
Hand Saws, furnished, doz. 75¢@80¢
Not V. furnished,50¢@60¢
Plane Handles:
H. 25¢@35¢ Jack Bolted,
55¢@60¢
Fore Bolted,
70¢@75¢

Hangers—

Barn Door, New Pattern, Round
Groove, Regular:
Inch,1 5 6 8

Doz.\$1.10 1.45 1.80 2.10 2.75
Barn Door, New England Pattern,
Check Back, Round Groove, Regu-
lar:
Inch,3 4 5 6

Doz.\$1.50 2.00 2.60 3.25
Chicago Spring Butt Co.:
Friction,25¢
Oscillating,25¢
Big Twin,25¢

Chisholm & Moore Mfg. Co.:
Baggage Car Door,50¢
Elevator,40¢
Railroad,55¢

Coleman Hardware Mfg. Co.:
Czar Ball Bearing, # doz. pair \$7.50
No. 10 Roller Bearing, doz. pr. 5.50
No. 20 Roller Bearing, doz. pr. 4.50
Nickel,50¢
J. G. G.,50¢@10¢

Cronk Hanger Co.:
100s Axle,60¢
Roller Bearing,60¢@10¢
Lane Bros.:
Parlor, Standard,\$3.75
Barn Door, Standard,\$2.15
Covered,50¢@10¢@5¢
Special,60¢@10¢

Lawrence Bros.:
Advance,60¢
Cleveland,60¢@10¢
Crown,60¢
New York,60¢
Perless,60¢@10¢
Sterling,60¢

McKinney Mfg. Co.:
No. 2, Standard, \$1.80,60¢@10¢
No. 1, Special, \$1.35,60¢@10¢
Stowell Mfg. and Foundry Co.:
Badger,60¢
Baggage Car Door,33¢@5¢
Climax Anti-Friction,50¢
Elevator,40¢
Interstate,50¢@10¢
Magic,50¢@10¢
Matchless,50¢@10¢
Naesen,50¢@10¢
Parlor Door,50¢
Railroad,50¢@10¢
Street Car Door,50¢@10¢
Steel, Nos. 300, 400, 500,40¢@15¢
Wild West,50¢@5¢
Zenith for Wood Track,50¢@10¢

Taylor & Boggis Foundry Co.:
Kidder's,50¢@50¢@10¢
Van Wagoner & Williams Hdw. Co.:
American Trackless,33¢@15¢
Wilcox Mfg. Co.:
Bike Roller Bearing,60¢@10¢
C. J. Roller Bearing,60¢@10¢
Cycle Ball Bearing,50¢
Dwarf Ball Bearing,40¢
Ives, Wood Track,60¢@10¢
L. T. Roller Bearing,60¢@10¢
New Era Roller Bearing,50¢@10¢
O. K. Roller Bearing,60¢@10¢@25¢
Prindle, Wood Track,60¢
Richards' Wood Track,60¢
Richards' Steel Track,50¢@10¢
Rimcor R-ster Bearing,60¢@10¢
Tandem Nos. 1 and 2,60¢
Underwriters' Roller Bearing,40¢
Wilcox Auditorium Ball Bearing, 30¢
Wilcox Barn Trolley No. 123,40¢
Wilcox Fire Trolley, Roller
Bearing,10¢
Wilcox Le Roy Noiseless Ball
Bearing,40¢
Wilcox New Century,50¢@10¢@10¢
Wilcox Trolley Ball Bearing,40¢

Harness Menders—See**Menders.****Harness Snaps—See Snaps.****Hatches—**

McKinney's Perfect Hasp # doz. 10¢@10¢
Wrought Hasps, Staples, &c.—See
Wrought Goods.

Hatchets—

Best Brands,10¢@10¢@50¢
Cheaper Brands,60¢@10¢@50¢
Note.—Net prices often made.

Hay and Straw Knives—

See Knives.

Hinges—

Blind and Shutter Hinges—
Acme and Dixie Shutter:
No.1 1½ 2 2½
Doz. pair,\$0.65 .60 .55 .47

Buffalo and Queen City Reversible
Shutter:
No.1 1½ 2 2½
Doz. pair,\$0.65 .60 .55 .47

Lull & Porter Old Style Shutter:
No.1 1½ 2 2½
Doz. pair,\$0.65 .60 .55 .47

1885 Old Pattern Blind Hinge:
No.1 1½ 2 2½
Doz. pair,\$0.75 1.35 2.60

Parker,70¢@75¢
North's Automatic Blind Fixtures, No.
2, for Wood, \$9.00; No. 3, for Brick,
\$1.50,10¢
Reading's Gravity,75¢@10¢
Sargent's, Nos. 1, 3, 5,60¢@10¢
Sargent's, Nos. 11 & 13,70¢@10¢
Wright's Hardware Co.:
Acme, Lull & Porter,65¢@10¢
Buffalo Gravity Locking, Nos. 1, 3
and 5,65¢@10¢@10¢
Champion Gravity Locking, No. 75, 75¢
1885 Old Pat'n, Nos. 1, 3 & 5,75¢
Tip Pattern, Nos. 1, 3 and 5,75¢
Double Locking, Nos. 20 and 25,70¢
Empire, Nos. 101 and 103,65¢@10¢
Niagara Gravity Locking, Nos. 1, 3
and 5,65¢@10¢@10¢
Noiseless, Nos. 56, 60, 65 and 55,65¢@10¢
O. S. Lull & Porter,65¢@10¢
Pioneer, Nos. 660, 45 and 55,65¢@10¢
Steamboat Gravity Locking, No. 10,
75¢

Stanley's Steel Gravity Blind Hinges,
doz. sets \$1.20,20¢@10¢

Gate Hinges—

Clark's or Shepard's—Doz. sets:
No.1 2 3
Hinges with Latches, \$1.90 2.50 4.25

Hinges only,1.50 1.55 3.20
Latches only,0.70 0.70 1.30
New England:
With Latch,doz. \$1.75@1.80
Without Latch,doz. \$1.40@1.45
Reversible Self-Closing:
With Latch,doz. \$1.65@1.75
Without Latch,doz. \$1.30@1.35
Western:
With Latch,doz. \$1.60@1.65
Without Latch,doz. \$1.00@1.05

Spring Hinges—
Holdback, Cast Iron, gro. \$9.00@10.00
Non-Holdback, Cast Iron,
gro. \$7.00@7.50

J. Bardsley's Patent Checking,15¢
Bommer Bros.:
Bommer's,33¢@5¢
Chicago Spring Butt Co.:
Chicago,20¢
Foot Locking,20¢
Garden City Engine House,20¢
Keene's Saloon Door,20¢
Triple End,40¢
Coleman Hdw. Co.:
Champion Holdback, # gr. \$10.00
J. G. C., # gr. \$9.50
Nickel, # gr. \$9.90

Lawson Mfg. Co.:
March ss,30¢
Matchless Pivot,35¢
Payson Mfg. Co.:
Oblique, Dbl. Acting,50¢@50¢@5¢
Stover Mfg. Co.:
Ideal, No. 18, Detachable, # gr. \$12.50

Ideal, No. 4,# gr. \$9.00
New Idea No. 1,# gr. \$9.00
New Idea, Double Acting,45¢
Van Wagoner & Williams Hdw. Co.:
Acme, # rt. Steel,30¢
Acme, Brass,20¢
American,30¢
Columbia, No. 14,# gr. \$9.00
Columbia, No. 18,# gr. \$25.00
Columbia, Adjustable,30¢
Gem, new list,# gr. \$12.50
Clover Leaf,25¢
Oxford new list,25¢

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar.
15, 1898:
Light Strap Hinges, 66¢
Heavy Strap Hinges, 70¢
Light T Hinges, 50¢@10¢
Heavy T Hinges, 60¢@10¢
Extra Heavy T Hinges,Extra
66¢ 25¢@25¢ 65¢

Hinge Hasps15¢
Cor. Heavy Strap70¢
Cor. Ex. Heavy T60¢
Rolled Plate,70¢@70¢@5¢

Screw Hook { 6 to 12 in., lb. 3 @34¢
14 to 20 in., lb. 2 3/4 @3 c
and Strap, 22 to 36 in., lb. 2 1/2 @2 3/4¢
Screw Hook and Eye:
3/4 in.,lb. 5 1/2 @5 1/4¢
1 in.,lb. 6 1/2 @6 1/4¢
1 1/2 in.,lb. 7 1/2 @7 1/4¢

Hoes—Eye—
Scovill and Oval Pattern,60¢@50¢@10¢@5¢
Grub. list Feb. 23, 1899,65¢@65¢@10¢
D. & H. Scovill,35¢

Handled—
Sept. 1, 1900, List:
Field and Garden,75¢@2¢
Ladies', Boys', Toy and Onion,
.....70¢@10¢@10¢

Street and Mortar,75¢@75¢@25¢
Cotton,70¢@10¢@10¢@5¢@25¢
Planters',70¢@10¢
Weeding,75¢
Note.—Manufacturers and jobbers use
a diversity of lists, and often sell at net
prices.

Ft. Madison Crucible Garden Hoe,75¢@3¢
Ft. Madison Crescent Cultivator Hoe,
per doz.75¢@10¢@25¢
Ft. Madison Mattock Hoes:
Regular Weight,# doz. \$4.50
Junior Size,# doz. \$4.00
Ft. Madison Sprouting Hoe, # doz. \$4.80
Ft. Madison Dixie Tobacco Hoe,75¢@20¢
Kreistinger's Cut Easy, per doz.75¢@25¢
Warren Hoe,60¢
W. & C. Ivanhoe,75¢@25¢
B. B. Cultivator Hoe,75¢@10¢
Acme Weeding,75¢@10¢
W. & C. Lightning Shuffle Hoe, # doz.,
\$5.50

Hog Rings and Ringers—
See Rings and Ringers

Hoisting Apparatus—
See Machines, Hoisting.

Hollow Ware—
See Ware, Hollow.

Holders—Bit—
Angular, # doz. \$24.00,45¢@10¢
File and Tool—
C. E. Jennings & Co. Model Tool Hold-
ers,33¢@5¢
Nicholson File Holders and File Han-
dles,33¢@5¢

Hooks—Cast Iron—
Bird Cage, Reading,50¢@10¢@60¢
Bird Cage, Sargent's List,50¢@10¢
Clothes Line, Sargent's List,50¢@10¢
Ceiling, Sargent's List,20¢@10¢@10¢
Clothes Line, Reading List,70¢
Clothes Line, Sargent's List,85¢@10¢@5¢@10¢@10¢
Coat and Hat, Stowell's,70¢
Coat and Hat, Reading,70¢@75¢
Coat and Hat, Sargent's List,85¢@10¢
Coat and Hat, Wrightville,85¢@10¢
Harness, Reading List,70¢@10¢@75¢

Wire—
Atlas, Coat and Hat:
Single Cases,45¢
10 Case Lots,45¢@10¢
Coat and Hat,50¢@10¢@5¢
Coat and Hat,50¢@10¢@5¢
B. B.,50¢@10¢@5¢
V Brace, Chief and Coar,50¢@10¢@5¢

Gem,2¢@10¢@5¢
Bright Wire Goods—See Wire.

Wrought Iron—
Box, or Case, Octagon Steel,doz. \$2.10@2.20
Cotton,doz. \$1.05@1.15
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—
Bush, Light, doz. \$5.50; Medium,
\$6.00; Heavy, \$6.50
Grass, Nos. 1 2 3 4
Best,\$1.50 1.75 2.00
Common,\$1.40 1.60 1.80 1.75
Potato and Manure70¢
Whiffletree,lb. 4 1/4¢
Hooks and Eyes:
Brass,60¢@10¢@10¢@70¢
Malleable Iron,70¢@5¢@70¢@10¢
Covert Saddlery Works' Self Locking
Gate and Door Hooks,80¢@10¢
Crown Picture,50¢@10¢
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse

Horseshoes—
See Shoes, Horse.

Hose Rubber—
Garden Hose, 3/4-inch:
Competition,ft. 4 1/4 @ 4 1/4¢
3-ply Standard,ft. 5 @ 6 c
1-ply Standard,ft. 8 @ 9 c
3-ply extra,ft. 9 @ 10 c
1-ply extra,ft. 11 @ 12 c
Cotton Garden, 3/4-in., coupled:
Low Grade,ft. 6 @ 7 c
Fair quality,ft. 8 @ 9 c

Irons—Sad—
From 14 to 10,lb. 3 @3 1/4¢
B. B. Sad Irons,lb. 3 1/2 @4¢
Chinese Laundry,lb. 5 @5 1/4¢
Chinese Sad,lb. 3 1/2 @5 1/4¢
Mrs. Potts', per set:
Nos. 50 55 60 65
75c 69c 82c 79c
New England Pressing, lb., 3 1/2 @3 1/4¢

Soldering—
Soldering Coppers,lb. 21¢@25¢
Covert Mfg. Co.,20¢@25¢

Pinking—
Pinking Irons,doz. 50¢@60¢

Jack Screws—See Screws.

Jacks, Wagon—
Covert Mfg. Co., Steel,45¢@25¢
Daisy,70¢
Lockport,40¢@40¢@10¢
Victor,60¢
Lane's Steel,40¢

Kettles—
Brass, Spun, Plain,20¢@25¢
Enamelled and Cast Iron—See Ware,
Hollow.

Knife Sharpeners—
See Sharpeners, Knife.

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives,40¢
Foster Bros' Butcher, &c.,30¢
Nichols' Butcher Knives,50¢
Hay and Straw—See Hay Knives.

Corn—
Ft. Madison Cut-Easy, # doz. \$3.25
Withington Acme, # doz., \$2.85; Dent,
\$2.75; #1, Serrated, \$2.20; Ser-
rated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.

Drawing—
Standard List,70¢@5¢@5¢
Adjustable Handle,25¢@33¢
Bradley's,35¢
C. E. Jennings & Co. Nos. 45, 46, 40¢@10¢
Jennings & Griffin,60¢@5¢
Swan's,70¢@10¢@25¢
Watrous,30¢@10¢@5¢
L. & L. J. White,20¢@5¢@25¢
Castelo, # holding,50¢@50¢@5¢

Hay and Straw—
Blizzard,\$5.75@6.00
Iwan's Sickle Edge,# doz. \$1.15
Lightning,\$7.50

Mincing—
Buffalo,# doz. \$1.50
Smith's, # doz., Single, \$2; Double, \$3,
45¢@50¢

Miscellaneous—
Farriers',doz. \$2.00@3.00
Wostenholms',# doz. \$3.00@3.25

Knobs—
Base, 2 1/2-inch, Birch, Rubber tip,
gro.\$1.35@1.40
Carriage, Jap. all sizes, gro. 30¢@35¢
Door, Mineral,doz. 63¢@70¢
Door, Por. Jap d.,doz. 75¢@80¢
Door, Por. Nickel,doz. \$2 10¢@2.30
Bardsley's Wood Door, Shutter, &c.,15¢
Picture, Sargent's,60¢@10¢
Snow's Victor,50¢@10¢

Ladders, Step—
Handy Ladder Work—
Extended Shipped Shipped
Length Length. Ready for K. D.,
Feet. Feet. Use Per doz. Per doz.
416.0014.00
518.0017.00
620.0021.00
722.0024.00
824.0025.00
926.0029.00
1028.0032.00
1130.0035.00
1232.0040.00
1334.0045.00

Ladies' Melting—
L. & M. Mfg. Co.,60¢
P. S. & W.,40¢@40¢@10¢
Reading,50¢@10¢
Sargent's,40¢@40¢@10¢

Lanterns—Tubular—
Regular Tubular,doz. \$4.5¢@5.00
Side Lift Tubular,doz. \$4.75¢@5.25
Square Lift Tubular,doz. \$4.75¢@5.25
Other Styles,40¢@10¢@10¢@5¢

Bull's Eye Police—
 2 1/2-inch flash light..... doz. \$3.50@3.75
 3-inch flash light..... doz. \$4.00@4.25
 2 1/2-inch regular..... doz. \$3.25@3.50
 3-inch regular..... doz. \$3.50@3.75

Latches, Thumb—
 Roggin's Latches..... doz. \$2@3.25

Lawn Mowers—
 See Mowers, Lawn.

Loaders, Cattle—
 Small..... doz. 1.50; large, 1.50
 Covey Mfg. Co..... 45@25

Lemon Squeezers—
 See Squeezers, Lemon.

Lifters, Transom—
 Dickson:
 3 x 4 ft. 1/2"..... \$100 \$11.00
 Other sizes, iron..... 70@100
 Other sizes, Brass and Bronze..... 70@
 Excelsior..... 60@60@100
 Payson's:
 Solid Grip Nos. 618 and 644..... 1.00
 Bronzed Iron..... 70@

Lines—
 Wire Clothes, Nos. 18 19 20
 100 feet..... \$2.90 \$2.50 1.95
 75 feet..... \$2.15 1.90 1.65

Ossawa Mills—
 Crown Solid Braided Chalk..... 33@45
 Mason's, No. 0 to No. 5..... 33@45
 Samsom Cordage Works:
 Solid Braided Chalk, No. 0 to 3..... 40@
 Silver Lake Braided Chalk, No. 0, 00, 000;
 No. 1, \$9.50; No. 2, \$7.00; No. 3, \$7.50
 \$ gr..... 30@

Locks, &c.— Cabinet—
 Cabinet Locks..... 33@35@47@

Door Locks, Latches, &c.—
 [Net prices are very often made on these goods.]

Reading Hardware Co..... 40@
 R. & E. Mfg. Co..... 50@
 Sargent & Co..... 40@40@100
 Slaymaker-Barry Co..... 30@35@
 Snow's Victor..... 50@100

Elevator—
 Stowell's..... 33@45

Padlocks—
 Wrought Iron, list Dec. 5, '97..... 70@70@100

Dog Collar, S. B. Co..... 50@
 R. & E. Mfg. Co. Wrt. Steel and Brass..... 50@
 S. B. & Co..... 40@

Sash, &c.—
 Fitch's Bronze and Brass..... 60@45
 Fitch's Iron..... 70@
 Ives' Patent..... 55@55@65
 Oefinger's Automatic..... 50@
 Payson's Perfect..... 70@
 Payson's Signal (new list)..... 75@
 Reading..... 60@100@100

Machines—
 Boring—
 Without Augers.
 Upright. Angular.
 Improved No. 3..... \$4.25 No. 1 \$5.00
 Improved No. 4..... 3.75 No. 2 3.38
 Improved No. 5..... 2.75
 Jennings'..... 2.50 3.00
 Millers' Falls..... 5.75
 Snell's, Rice's Pat. 2.50 2.75
 Swan's, No. 500..... 5.10 No. 200 6.45

Holisting—
 Moore's Anti-Friction Differential Pulley Block..... 30@
 Moore's Hand Hoist, with Lock Brake, 20@

Ice Cutting—
 Chandler's..... 15@

Washing—
 Wayne American..... \$38.00
 Western Star, No. 2..... 28.00
 Western Star, No. 3..... 30.00
 St. Louis, No. 41, \$ doz. 60.00

Mallets—
 Hickory..... 65@50@55
 Lignumvite..... 65@50@55
 Timmers', Hickory and Applewood, doz..... 50@55@
 Fiber Head Stearns..... 30@100

Mats— Door—
 Elastic Steel (W. G. Co.)..... 10@

Mattocks—
 See Picks and Mattocks.

Meat Cutters—
 See Cutters, Meat.

Milk Cans—See Cans, Milk

Mills— Coffee—
 Box and Side, list Jan. 1, '98..... 50@100@60@55

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co..... 20@30@
 National, list Jan. 1, '94..... 30@
 Parker's Columbia and Victoria..... 50@100@60@
 Parker's Box and Side..... 50@100@60@
 Swift, Lane Bros..... 30@

Mincing Knives—
 See Knives, Mincing.

Molasses Cates—
 See Cates, Molasses.

Money Drawers—
 See Drawers, Money.

Mowers, Lawn—
 Net prices are generally quoted, Cheap..... all sizes, \$2.00
 Good..... all sizes, \$2.50@3.75
 10 12 14 16-inch
 High Grade 4.25 4.50 4.75 5.00
 Peenyan and Continental 60@100@50@
 Quaker City..... 70@55
 Great American..... 70@55

Philadelphia:
 Styles M., S., C., K., T..... 70@100
 Style A, all Steel..... 60@100
 Style E, Low Wheel..... 60@100
 Style E, High Wheel..... 70@100
 Drexel and Gold Coin, low list..... 50@

Nails—
 Cut and Wire. See Trade Report.
 Wire Nail: and Brads, Papered.
 List July 20, 1899..... 35@85@100
 Hungarian, Finishing, Upholsterers, etc. See Tacks

Horse—
 Nos. 6 7 8 9 10
 A. C..... 25@25@25@21@21@
 Capewell..... 19@18@17@16@16@10@50
 C. B. K..... 25@25@22@21@21@40@
 Champain..... 28@20@25@24@23@40@5@25
 Maud S..... 25@23@22@21@21@50@
 Neponset..... 23@21@20@19@18@40@
 Putnam..... 23@21@20@19@18@33@44
 Standard..... 23@21@20@19@18@40@
 Star..... 23@21@20@19@18@35@55
 Vulcan..... 23@21@20@19@18@25@10@

Picture—
 1 1/2 2 2 1/2 3 3 1/2 in.
 Brass Head, 1/2 60 70 95 100 gro.
 Por. Head..... 1.10 1.10 1.10 .. gro.

Nippers, See Pliers and Nippers.

Nut Crackers—
 See Crackers, Nut.

Nuts—
 List Feb. 1, '99.
 Cold Punched Off
 Mfrs. or U. S. Standard. list.
 Hexagon, plain..... 4.40@4.50
 Square, plain..... 4.30@4.40
 Square, C. T. & R..... 4.10@4.20
 Hexagon, C. T. & R..... 4.70@4.80
 Hot Pressed:
 Mfrs., U. S. or Nar. Gauge Stan'd.
 Square..... 5.20@5.30
 Hexagon..... 5.50@5.60
 Note.—Tapped Nuts are now 240c. higher than above.

Oakum—
 Beat or Government..... lb. 64@
 Navy..... lb. 5@
 U. S. Navy..... lb. 5@
 Plumbers' Spun Navy..... 5@
 In carload lots 1/2 lb. off f.o.b. New York.

Oil, Axle—
 Snow Flake:
 1 pt. cans, per doz..... \$3.00
 1 qt. cans, per doz..... \$4.80
 1 gal. cans, per doz..... \$16.00
 5 gal. cans, per doz..... \$80.00

Oil Tanks—See Tanks, Oil.

Oilers—
 Brass and Copper..... 10@10@50@
 Tin or Steel..... 60@100@55@
 Zinc..... 60@100@55@
 Malleable, Hammers Improved, No. 1, \$3.60; No. 2, \$4.40; No. 3, \$4.40; No. 4, \$4.40; No. 5, \$4.40; No. 6, \$4.40; No. 7, \$4.40; No. 8, \$4.40; No. 9, \$4.40; No. 10, \$4.40; No. 11, \$4.40; No. 12, \$4.40; No. 13, \$4.40; No. 14, \$4.40; No. 15, \$4.40; No. 16, \$4.40; No. 17, \$4.40; No. 18, \$4.40; No. 19, \$4.40; No. 20, \$4.40; No. 21, \$4.40; No. 22, \$4.40; No. 23, \$4.40; No. 24, \$4.40; No. 25, \$4.40; No. 26, \$4.40; No. 27, \$4.40; No. 28, \$4.40; No. 29, \$4.40; No. 30, \$4.40; No. 31, \$4.40; No. 32, \$4.40; No. 33, \$4.40; No. 34, \$4.40; No. 35, \$4.40; No. 36, \$4.40; No. 37, \$4.40; No. 38, \$4.40; No. 39, \$4.40; No. 40, \$4.40; No. 41, \$4.40; No. 42, \$4.40; No. 43, \$4.40; No. 44, \$4.40; No. 45, \$4.40; No. 46, \$4.40; No. 47, \$4.40; No. 48, \$4.40; No. 49, \$4.40; No. 50, \$4.40; No. 51, \$4.40; No. 52, \$4.40; No. 53, \$4.40; No. 54, \$4.40; No. 55, \$4.40; No. 56, \$4.40; No. 57, \$4.40; No. 58, \$4.40; No. 59, \$4.40; No. 60, \$4.40; No. 61, \$4.40; No. 62, \$4.40; 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Pulleys—

Hay Fork, Swivel or Solid Eye—
 Hay Fork, Stowell's Anti-Friction, 5 in. doz. \$1.50@1.75
 Wheel, 4 doz. \$1.20@1.40
 Hot House, A. W. W. & Co., 60@60@105
 Japanned Clothes Line, 60@60@105
 Japanned Screw, 70@10@105
 Japanned Side, 70@10@105
 Stowell's Ceiling or End, Anti-Friction 605
 Stowell's Dumb Walter, Anti-Friction 605

Stowell's Electric Light, 605
 Stowell's Side, Anti-Friction, 605@105

Sash Pulleys—

Acme, 1 1/2 in., 16; 2 in., 19
 Common Sense, 1 1/2 in., 16; 2 in., 19
 Empire, 1 1/2 in., 15 1/2; 2 in., 18 1/2
 Fox-All-Steel, Nos. 3 and 7, 2 1/2 in., 19

No. 9, 1 1/2 in., 19
 Extra for Plated Finish, 19
 Extra for Anti-Friction, 19
 Bushing, 19

Grand Rapids All Steel Noiseless, 405
 Ideal No. 13, 1 1/2 in., 19
 Improved, 1 1/2 in., 15 1/2; 2 in., 18 1/2
 Niagara, 1 1/2 in., 16; 2 in., 19
 No. 26, Troy, 1 1/2 in., 14 1/2; 2 in., 15 1/2
 Star, 1 1/2 in., 18; 2 in., 19

Tackle Blocks—See Blocks.

Pumps—

Ostern, 60@60@105
 Pitcher Spout, 75@75@105

Pump Leathers, all sizes, gro. \$6.00
 Barnes Dbl Acting (low list), 55

Flint & Walling's Fast Mail, 55@55@105
 Flint & Walling's Pitcher Spout, 75@75@105

Loud's Suction Pumps, U. S. Co., 205
 Meyer's Pumps, low list, 705

Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co., 205

Punches—

Revolving (4 tubes), doz. \$4.00@4.50
 Saddlers or Drive, good, doz. 65@70c

Spring, good quality, \$2.00@2.25
 Bemis & Call Co.'s Cast Steel Drive, 504

Bemis & Call Co.'s Check, 554
 Bemis & Call Co.'s Spring, 504

Niagara Hollow Punches, 1454
 Niagara Solid Punches, 554

Steel Screw, B. & L. Mfg. Co., 405
 Tinnars' Hollow, P. S. & W. Co., 35@35@55

Tinnars' Solid, P. S. & W. Co., 554
 \$1.44

Rail—

Barn Door, &c.,
 Barn Door, Light, 1/2 in. 1/2 1/2 1/2

100 feet, \$2.00 \$2.50 \$3.00
 B. D., for N. E. Hangers:

Small, Med. Large,
 100 feet, \$2.40 2.70 3.20

Sliding Door, Bronzed Wrt Iron,
 ft. 6 1/2

Sliding Door, Iron Painted, 3 1/2@3c
 Sliding Door, Wrought Brass, 1 1/2

in, lb. 36c, 304
 Cronk's Double Braced Steel Rail, 3 1/2

foot, 3 1/2
 Cronk's O. N. T. Rail, 3 1/2

Lanes' O. N. T., 1 inch, \$3.90
 Lanes' Standard, 100 ft., 1 inch, \$3.90

Lawrence Bros, 3 1/2 ft. 3 1/2
 McKinney's None Better, 3 1/2 ft. 3 1/2

McKinney's Standard, 3 1/2 ft. 3 1/2
 Moore's Wrt's Bracket, Steel, 3 1/2

Stowell's Steel Rail, plain, 105

Rakes—

Sept. 1, 1900, List:
 Cast Steel, 70@50@25

Malleable, 70@105
 Lawn Rakes, Metal Head, per doz.,

20 teeth, \$2.25; 24 teeth, \$2.50
 Port Madison Red Head Lawn, \$3.25

Port Madison Blue Head Lawn, \$3.00
 Jackson Lawn, 20 and 24 teeth, 19

doz. \$4.50
 Kohler's Lawn Queen, 24-tooth, 19

doz. \$4.00
 Kohler's Paragon, 24-tooth, 19

doz. \$3.00
 Kohler's Steel Garden, 14-tooth, 19

doz. \$3.50
 Kohler's Malleable Garden, 14-tooth, 19

doz. \$2.50

Rasps, Horse—

Diston's, 754
 Heller Bros, 60@10@105

McCaffrey File Co. Horse Rasps, 60@10@105

New Nicholson Horse Rasp, 70@105
 See also Files.

Razors—

Fox Razors, No. 42, 19 doz. \$30.00
 Fox Razors, No. 44, 19 doz. \$34.00

Fox Razors, No. 83, Platina, 19 doz. \$34.00

Sterling Razor Works, 505

Razor Straps—

See Straps, Razor.

Reels—Fishing—

Heard's Aluminum, German Silver,
 Gold, Bronze, Silver, Rubber, Popolo

and Salmon, Single Action, Multiplying
 and Quadruple, all sizes, 255

Heard's Single Action Series, 102P
 and PN, 202P and PN, 102P and PN

and PN, 202P and PN, 304P and PN,
 60304P and PN, 503 and 502N

503 and 502N, 60304N, Competitor, 505
 Series, 3004N and PN, 4N and PN

3004N, 3004P and PN, 00304N, 0024
 and 0024N, 5000N and PN, 40@105

Shakespeare, Style C, 254

Registers—

Black Jap, 50@50@105
 White Jap, 405

Bronzed, 405
 Nickel Plated, 405

Electro Flat, 405

Riddles, Grain or Sand—
 16 in. per doz., \$2.00@2.25

17 in. per doz., \$2.50@2.75
 18 in. per doz., \$2.50@2.75

Rings and Ringers—

Bull Rings—
 Steel, \$0.75 0.85 0.88 doz.

Copper, 1.10 1.20 1.50 doz.
 Hog Rings and Ringers—
 Hill's Rings, gro. boxes, \$1.50@5.00

Hill's Rings, G. I., doz. 75c

Blair's Rings, 19 gr. \$5.75@6.00

Blair's Rings, 19 gr. \$5.00@5.10

Brown's Rings, 19 gr. \$5.00@5.25

Brown's Rings, 19 gr. \$5.00@5.25

Perfect Rings, 19 gr. \$9.00@9.50

Perfect Rings, 19 gr. \$1.25@1.35

Rapid Rings, 19 gr. \$5.00

Rapid Rings, 19 gr. \$5.50

Rivets and Burrs—

Copper, 50@50@55

Iron or Steel, 62 1/2@62 1/2@105

Miscellaneous, 62 1/2@62 1/2@105

Rivet Sets—See Sets.**Roasting and Baking**

Pans—See Pans, Roasting and Baking.

Rollers—

Acme Stowell's Anti-Friction, 505

Arm Door, Sargent's list, 50@10@55

Cronk's Day, 60@65

Cronk's Brinkerhoff, 60@65

Lane's Star, 33 1/2

Stowell's Barn Door Star, 19 doz. \$1.25

Rope—

NOTE.—Carload lots, except on Jute
 Rope, 1/2 to 1/4 per lb. less than the fol-

lowing prices, which are for small lots.

Manila, 7-16 in. and larger, lb., @ 9 1/2c

Manila, 1/4 and 5-16 in. lb., @ 10c

Manila, Tarred Rope, 15 lb., @ 9 1/2c

Manila Hay Rope, Med. M. lb., @ 9 1/2c

Sisal, 7-16 in. and larger, lb., @ 6 1/2c

Sisal, 1/4 and 5-16 in. lb., @ 7 1/2c

Sisal, Hay Rope, 2 to 10 lb., @ 6 1/2c

Sisal, Tarred, Medium lb., @ 5 1/2c

Cotton Rope, lb., @ 11 1/2c

Best, 1/4-in. and larger, lb., @ 13c

Med. M., 1/4-in. and larger, lb., @ 11 1/2c

Com., 1/4-in. and larger, lb., @ 8 1/2c

Jute Rope, No. 1, 1/4 in., lb., @ 6c

and up, lb., @ 5 1/2c

Jute Rope No. 2, 1/4 in., lb., @ 5 1/2c

and up, lb., @ 4 1/2c

Wire Rope—

Galvanized, 30@25@25

Plain, 35@25@25

Ropes, Hammock—

Covert Mfg. Co., 45@25

Covert Saddlery Works, 605

Rules—

Bozwood, 75@10@10@10@75@10@10

Ivory, 10@10@10@10@10@10@10@10@10

Larkin's Lumber, 50@105

Stanley R. & L. Co., 50@105

Boxwood, 75@10@10@75@10@10@10

Ivory, 35@10@35@10@105

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saw Frames—**

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Saws—**

Atkins' Circular, 50@50@105

Atkins' Band, 50@10@605

Atkins' Cross Cuts, 35@55

Atkins' Mulay, Mill and Drag, 50@105

Atkins' One-Man Saw, 405

Atkins' Wood Saws, 405

Atkins' Hand, Comp. & Co., 405

Diston's Circular Solid and Inserted, 505

Diston Band 2 to 14 in. wide, 605

Diston Band 1/4 to 1 1/2, 705

Diston Crosscuts, 45@45@105

Diston Narrow Crosscuts, 50@50@105

Diston Mulay, Mill and Drag, 505

Diston Framed Wood Saws, 35@35@754

Diston Wood Saw Blades, 40@40@754

Diston Wood Saw Rods, 255

Diston Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 00, Combination, 30@30@754

Diston Compass Keyhole, 25@25@754

Diston Butcher Saws and Bars, 35@35@754

C. E. Jennings & Co.'s:

Back Saws, 255

Butcher Saws, 255

Compass and Key Hole Saws, 255

Framed Wood Saws, 405

Hand Saws, 25@305

Wood Saw Blades, 405

Peace Circular and Mill, 505

Peace Cross Cuts, list Jan. 1, 90, 505

Peace Hand, Panel and Rip, 505

Richardson's Circular and Mill, 505

Richardson's X Cuts, list Jan. 1, 90, 505

Richardson's Hand, 505

Simonds' Circular Saws, 505

Simonds' Crescent Ground Cross Cut Saws, 355

Simonds' One-Man Cross Cuts, 40@105

Simonds' Gang Mill, Mulay and Drag Saws, 45@45@35

Hack Saws—

Diston Concave Blades, 255

Diston Keystone, 305

Diston Hack Saw Frames, 305

C. E. Jennings & Co.'s:

Hack Saw Frames, Nos. 175, 180, 330, 405

Hack Saws, Nos. 175, 180, 330, complete, 405

Griffin's Hack Saw Frames, 455

Griffin's Hack Saw Blades, 455

Star Hack Saws and Blades, 15@105

Scroll—

Barnes' No. 7, 155

Barnes' Scroll Saw Blades, 405

Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18

with boring attachment, \$20, 205

Lester, complete, \$10.00, 15@105

Rogers, complete, \$4.00, 15@105

Scale Beams—

See Beams, Scale.

Scales—

Family, Turnbull's, 30@30@105

Hatch, Counter:

Platform, 4 lb. by 1/4 oz., doz. \$5.75

Two Platform, 8 lb. by 1/2 oz., doz. \$10.00

Union Platform, Plain, \$1.75@2.00

Union Platform, Striped, \$1.85@2.15

Chatillon's Eureka, 255

Chatillon's Grocers' Trip Scales, 505

Pelouze Scales—Household, counter, 505

Commercial, Postal, 10, 20, 505

"The Standard" Portables, 455

"The Star" R. R. and Wagon, 505

Scrapers—

Box, 1 Handle, doz. \$2.25@2.75

Box, 2 Handle, doz. \$3.75@4.00

Ship, No. 1, doz. \$3.50; No. 2, \$2.25@2.50

Adjustable Box Scraper (S. R. & L. Co.), \$6.00, 30@105

Foot, W. E. Pratt Mfg. Co., \$1.15@1.25

Screens, Window and Frames—

Bonanza Window Screens, 50@10@254

Fiver Pattern Window Screen, 50@10@254

Maine Window Screen Frames, 40@10@254

Phillips' Window Screen Frames, 505

Porter's Extension Window Screens, 50@105

Wahash Spring Adj. Screen, 505

Screw Drivers—

Shovels and Tongs—

Brass Head.....60¢ to 60¢ 10¢
Iron Head.....60¢ to 60¢ 10¢

Sieves and Sifters—

Hunter's Imitation, gro. \$11.00 to 12.00
Buffalo Metallic Blue, S. S. & Co., gr. 14
14 & 16 16 & 18 18 & 20
14 & 16 16 & 18 18 & 20
Eclipse.....gr. \$10.00
Electric Light.....gr. \$12.00
Hunter's Genuine.....gr. \$12.50
Shaker (Barber's Pat.) Flour Sifters.....
per doz., \$3.00.....30¢

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 19, Nested, doz.....\$0.75 to 0.80
Mesh 20, Nested, doz.....85¢ to .90
Mesh 26, Nested, doz.....1.00 to 1.05

Sinks—**Cast Iron—**

Standard list.....60¢ to 60¢ 10¢
NOTE—These sinks ensure uniformity
in size used by jobbers.

Wrought Steel—

Columbus Galv'd and Enameled.....60¢ to 55¢
Columbus, Painted.....45¢
L. & G. Mfg. Co., Galvanized.....50¢
L. & G. Mfg. Co., Enameled.....50¢

Sinks, Wagon—

Cast Iron.....70¢ to 10¢ 75¢
Malleable Iron.....40¢ to 10¢ 50¢
Steel.....35¢ to 10¢ 50¢

Slates—

"D" Slates.....60¢ to 10¢ 50¢ to 10¢ 10¢
Unexcelled Noiseless Slates.....
60¢ to 10¢ 50¢ to 10¢ 50¢
Wire Bound.....60¢ to 10¢ 50¢
Double Slates, add \$1 case, net.

Slaw Cutters—See Cutters.**Slicers, Vegetable—**

Sterling \$2.00.....83¢ to 45¢

Snaps, Harness—

German.....40¢ to 40¢ 10¢
Covert Mfg. Co.:
Derby.....35¢ to 25¢
High Grade.....45¢ to 25¢
Jockey.....40¢ to 25¢
Trojan.....45¢ to 25¢
Covert's Saddlery Works:
Banner.....60¢ to 10¢
Crown.....80¢ to 10¢
Triumph.....60¢ to 10¢
W. & E. T. Fitch Co.:
Bristol.....40¢ to 10¢
Empire.....50¢ to 5¢
German.....40¢
National.....50¢ to 5¢
Perfect.....60¢ to 5¢
Clippet.....40¢
Champion.....40¢
Security.....40¢
Victor.....60¢ to 5¢
Oneda Community:
Solid Steel.....65¢ to 85¢ to 10¢
Solid Steel.....65¢ to 85¢ to 10¢
Sargent's Patent Guarded.....60¢ to 10¢

Snaths—

Scythe.....45¢ to 55¢

Snips, Tinnners'—See Shears.**Soldering Irons—**

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—**Silver Plated—**

Flat Ware.....50¢ to 10¢ 60¢ to 10¢
Wm. Rogers Mfg. Co.....50¢ to 10¢

Miscellaneous—

German Silver.....60¢ to 10¢
Wm. Rogers Mfg. Co.:
15¢ German Silver.....60¢
Rogers' Silver Metal.....50¢ to 10¢

Springs—**Door—**

Gem (Coll.).....20¢
Star (Coll.).....30¢
Torrey's Rod, 39 in., per doz. \$1.10 to 1.25
Warner's No. 2, per doz. \$1.50; No. 3,
\$3.00.....60¢ to 10¢
Victor (Coll.).....60¢ to 10¢

Carriage, Wagon, &c.**Factory Shipments.**

1 1/4 in. and wider.....Blk. Hf. Bt. Bt.
4 1/4 4 1/4 4 1/4 lb
Cliff's Bolster Springs.....35¢
Cliff's Seat Springs.....per pair 55¢

Sprinklers, Lawn—

Enterprise.....25¢ to 30¢
Philadelphia No. 1, per doz. \$12; No. 2,
\$15; No. 3, \$24.....30¢

Squares—

Nickel plated.....List Jan. 5, 1900
Steel and Iron.....70¢ to 5¢
Rosewood Hdl. Try Square and T-
Bevels.....60¢ to 10¢ 10¢ to 70¢
Iron Hdl. Try Squares and T-Bevels,
40¢ to 10¢ 40¢ to 10¢

Squeezers—**Lemon—**

Wood, Common, gro., No. 2, \$5.25
to \$5.50; No. 1, \$6.25 to \$6.50.
Wood, Porcelain Lined:
Cheap.....doz. \$2.00 to 2.75
Good Trade.....doz. \$3.00 to 3.50

Tinned Iron.....doz. \$0.75 to 1.3
Iron, Porcelain Lined doz. \$2.90 to 3.25
Jennings' Star.....per doz. \$1.85 to 1.90
King.....per doz. \$2.00

Staples—

Barbed Blind.....lb. 84¢ to 94¢
Electricians' Association list.....75¢ to 10¢
Fence Staples, same price as Barbed
Wire. See Trade Report.
Poultry Netting, Staples.....per lb. 5¢
Grand Crossing Tack Co.'s list.....80¢ to 10¢

Steels, Butchers'—

Dick's.....40¢
Foster Bros.....40¢
C. & A. Hoffmann's.....40¢
Nichols Bros.....40¢

Steelyards—25¢ to 25¢ 10¢**Stocks and Dies—**

Blacksmiths'.....40¢ to 40¢ 10¢
Gardner Die Stocks No. 1.....50¢
Gardner Die Stocks, larger sizes.....40¢
Green River.....25¢
Lightning Screw Plate.....25¢
Little Giant.....25¢
Reese's New Screw Plates.....25¢ to 30¢
Curtis Reversible Ratchet Die Stock.....25¢

Stone—**Soythe Stones—**

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 inch, \$10.90 per
gro., 12 inch, \$12.00
Cleveland Stone Co., list Nov., '92, 33¢ to 45¢
Pike Mfg. Co., list '95-'96.....33¢ to 45¢

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
Corundum Oil, Double Grit.....50¢
Corundum Axe Stones, Slips, etc.....55¢
Pike Mfg. Co.:
Hindustan No. 1, per doz. \$5
Sand Stone.....5¢
Turkey Oil Stone, Extra.....33¢ to 45¢
5 to 8 in.....33¢ to 45¢
Turkey Slips.....\$1.50
Lily White Washita.....60¢
Rosa Red Washita.....60¢
Washita Stone, Extra.....60¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....40¢
Lily White Slips.....90¢
Rosa Red Slips.....90¢
Washita Slips.....90¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 5 to 5 1/2 in. \$2.50
Arkansas Stone, No. 1, 5 to 5 1/2 in. \$3.50
India Oil Stones.....25¢
Tangle Mills:
Emery Oil, per doz. \$5.00.....50¢ to 80¢

Stoners—**Cherry—**

Enterprise.....25¢ to 30¢

Stops, Bench—

Millers Falls.....15¢ to 10¢
Morrill's.....per doz. No. 1, \$10.00; No. 2,
\$11.00, 40¢ to 20¢

Stops, Window—

Ives' Patent.....25¢ to 55¢
Wilcox, Steel, per doz. \$0.00.....50¢

Stove Boards—**See Boards, Stove.****Stove Polish—See Polish, Stove.****Strainers, Pump—**

Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—

Cary's Universal, case lots.....20¢ to 10¢

Stretchers, Carpet—

Cast Iron, Steel Points.....doz. 55¢ to 65¢
Cast Steel, Polished.....doz. \$2.25
Socket.....doz. \$1.75

Stuffers, Sausage—

Miles' Challenge, per doz. \$20.....50¢ to 50¢ 55¢
Enterprise Mfg. Co.....25¢ to 35¢ 75¢
National Specialty Mfg. Co., list Jan.
1, '97.....80¢

Tacks Brads, &c.—**See Trade Report.**

List Jan. 15, '99.
Carpet Tacks, American.....90¢ to 40¢ 5¢
American Cut Tacks.....90¢ to 40¢ 5¢
Sweeds Iron Tacks.....90¢ to 40¢ 5¢
Sweeds Upholsterers' Tacks.....90¢ to 40¢ 5¢
Gimp Tacks.....90¢ to 40¢ 5¢
Lace Tacks.....90¢ to 40¢ 5¢
Trimmers' Tacks.....90¢ to 40¢ 5¢
Looking Glass Tacks.....70¢ to 10¢ 5¢
Bill Posters' and Railroad Tack.....90¢ to 40¢ 5¢
Hungarian Nails.....90¢ to 25¢ 5¢
Common and Patent Brads, 70¢ to 10¢ 5¢
Trunk and Clout Nails.....80¢ to 10¢ 5¢

NOTE—The above prices are for
Philadelphia Weights. An extra 5% is given
Star Weights and an extra 10 1/2% on
Standard Weights.

Miscellaneous—

Double Point Tacks.....90¢ to 7 or 8 tens
Steel Wire Brads, R. & E. Mfg.
Co.'s list.....50¢ to 10¢ 50¢
See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. \$3.90
Emerald, S. S. & Co.....60-gal. \$4.00
Queen City S. S. & Co., 60-gal.....\$3.50
Queen City S. S. & Co., 60-gal.....\$4.35

Tapes, Measuring—

American Asses' Skin.....40¢ to 10¢ 50¢
Patent Leather.....25¢ to 30¢ 55¢
Steel.....40¢ to 10¢ 55¢
Chesterman's.....25¢ to 30¢ 55¢

Eddy's Steel.....40¢ to 40¢ 55¢
Eddy's Metallic.....33¢ to 33¢ 45¢
Keuffel & Esser Co., Steel and Metallic.....35¢
Lower list, 1899.....33¢ to 35¢
Larkin's Steel.....30¢ to 30¢ 55¢
Larkin's Metallic.....30¢ to 30¢ 55¢

Thermometers—

Tin Case.....80¢ to 80¢ 10¢

Ties, Bale—Steel.

Standard Wire.....50¢ to 10¢ 55¢

Ties, Wall—

Cleveland Wire Spring Co.:
Galv. Steel 5 3/2 x 8 1/2 in. \$ 1000 \$10.00
Galv. Steel 5 3/2 x 8 1/2 in. \$ 1000 \$11.00
Galv. Steel 5 3/2 x 11 1/4 in. \$ 000 \$12.00
Galv. Steel 5 3/2 x 15 1/4 in. \$ 1000 \$14.00

Tinners' Shears, &c.—

See Shears, Tinnners', &c.

Tinware—

Stamped, Japanned and Placed, sold
very generally at net prices.

Tire Benders, Upsetters,

&c.—See Benders and Upset-

ters, Tire.**Tobacco Cutters—**

See Cutters, Tobacco.

Tools—**Coopers'—**

L. & J. White.....20¢ to 20¢ 55¢

Saw—

Atkins' new list.....40¢
Simonds' Improved.....33¢ to 45¢
Simonds' Crescent.....25¢

Ship—

L. & J. White.....25¢

Transom Lifters—

See Lifters, Transom.

Traps—Game—

Oneda Pattern.....70¢ to 10¢ 75¢ to 10¢
Newhouse.....45¢ to 50¢
Hawley & Norton.....65¢ to 70¢
Victor (Oneda Pattern).....75¢ to 75¢ 10¢
Star (Blake Pattern).....65¢ to 10¢ 70¢ to 55¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 9 to 9 1/2
Mouse, Round or Square Wire.....
doz. \$0.85 to 1.00

Diamond Joe Mouse Traps.....per doz. 60¢
Diamond Joe Rat Traps.....per doz. \$1.00

Marty French Rat and Mouse Traps
(Genuine):
No. 1, Rat, per doz. \$12.00; case of 24
\$10.50

No. 3, Rat, per doz. \$5.50; case of 50
\$5.00

No. 3 1/2, Rat, per doz. \$1.50; case of 72
\$1.00

No. 4, Mouse, per doz. \$3.50; case of 72
\$2.75

No. 5, Mouse, per doz. \$2.75; case of 150
\$2.25

Schuyler's Rat Killer, No. 1, per gr. \$30.00;
No. 2, per gr. \$30.00; Mouse, No. 3,
\$18.00.....50¢

Fly—

Balloon, Globe or Acme.....
doz. \$1.15 to 1.25; gro. \$12.00 to 14.00
Harper, Champion or Paragon.....
doz. \$1.25 to 1.40; gro. \$13.50 to 15.00

Trimmers, Spoke—

Bonney's Nos. 1 and 2.....40¢
Stearns.....25¢

Trowels—

Diamond Brick and Pointing.....30¢
Diamond Plastering.....25¢
Diamond "Standard Brand" and Gar-
den Trowels.....40¢
Never-Break Steel Garden Trowels.....
gro. \$7.00

Peace's Plastering.....80¢
Rose Brick and Plastering.....25¢ to 55¢
Woodrough & McFarlin, Plastering.....25¢ to 55¢

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40¢
Daisy Stove Trucks, improved pattern.....
per doz. \$21.00

Model Stove Trucks.....per doz. \$18.50

Tubs, Wash—

No. 1 2 3
Galvanized, per doz. \$5.00 5.50 6.00
Galvanized Wash tubs (S. S. & Co.):
No. 1 2 3 10 20 30
Per doz \$5 25 6.00 6.75 6.50 7 25 8.00

Twine—

Miscellaneous— BC H.
No. 5, 3/4 and 1/2 lb. Balls.....50¢
No. 15, 3/4 and 1/2 lb. Balls.....50¢
No. 15, 3/4 and 1/2 lb. Balls.....50¢
No. 15, 3/4 and 1/2 lb. Balls.....50¢
No. 35, 3/4 and 1/2 lb. Balls.....50¢
Chalk Line, Cotton, 1/4 lb. Balls.....15¢ to 20¢
Cotton Mops, 2, 3, 12 and 15 lb. 10
doz.....7¢ to 8¢
Cotton Wrapping, 5 Balls to lb.....9¢ to 16¢
American 3-Ply Hemp, 1/4 and 1/2 lb.
Balls.....13¢ to 15¢
American 3-Ply Hemp, 1-lb. Balls.....13¢ to 15¢
India 3-Ply Hemp, 1/4 and 1/2 lb.
Balls (Spring Twine).....10¢
India 3-Ply Hemp, 1-lb. Balls.....10¢

India 3-Ply Hemp, 1/4-lb. Balls.....9¢
2, 3, 4 and 5-Ply Jute, 1/4-lb. Balls.....8¢ to 9¢
Mason Line, Linen, 1/4-lb. Balls.....15¢
No. 26, Mattress, 1/4 and 1/2 lb. Balls.....35¢
Wool.....7¢

Vises—

Solid Box.....40¢ to 50¢
Bonney's Saw Vises.....40¢ to 10¢

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40¢
Standard.....40¢
Amateur.....25¢
Bonney's.....40¢ to 10¢
Fisher & Norris Double Screw.....15¢ to 10¢
Hollands':
"Machinists".....40¢
Key-tone.....70¢
Lewis Tool Co.....20¢ to 30¢
Massey's Perfect.....15¢ to 20¢
Massey's Clincher.....30¢ to 40¢
Merrill's.....20¢
Miller's Falls.....low list 10¢
Parker's:
Victor.....20¢ to 25¢
Regulars.....20¢ to 25¢
Vulcan's.....40¢ to 45¢
Combination Pipe.....35¢ to 40¢
Prentiss.....20¢ to 25¢
Sargent's.....40¢
Simpson's Adjustable.....40¢
Snediker's X. L.....20¢ to 25¢
Stephens'.....20¢ to 25¢
Toles' Woodworking.....25¢
Van, W. & W. Edw. Co.....40¢

Saw Filers—

Bonney's, No. 1, \$13; No. 3, \$16 50¢ to 10¢
Dixon's D 8 Clamp and Guide, per doz.
\$30.....25¢
Reading.....40¢ to 10¢
Wentworth's Rubber Jaw, Nos. 1, 2
and 3.....30¢ to 75¢

Miscellaneous—

Bignall & Keeler Combination Pipe
Vise.....60¢
Parker's Combination Pipe:
87 Series.....60¢
187 Series.....60¢ to 5¢
No. 870.....40¢

Wads—Price Per M.

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
B. E., 11 up.....\$1.00
P. E., 9 and 10.....1.55
P. E., 8.....1.50
P. E., 7.....1.60
Ely's B. E., 11 and larger.....\$1.70 to 1.75
Ely's P. E., 12 to 20.....\$3.00 to 3.25

Wagon Jacks—

See Jacks, Wagon.

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40¢

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....65¢ to 65¢ 10¢
Unground.....70¢ to 70¢ 10¢
White Enameled Ware:
Makin Kettles.....80¢ to 80¢ 10¢
Boilers and Saucepans.....60¢ to 60¢ 10¢
Tinned Boilers and Saucepans.....
60¢ to 60¢ 10¢

See also Pots, Glue.**Enameled—**

Agate Nickel Steel Ware, list July '99, 35¢
Granite Ware, list Jan. 1, '94, revised
Jan. 2, '95.....40¢ to 10¢
Second Quality, Agate Nickel Steel.....65¢
Second Quality, Granite.....70¢ to 10¢ 70¢ to 10¢ 10¢

Iron Clad—

Peppered Ware, high list.....70¢
Mottled Ware, high list.....75¢
Never Break Enameled.....50¢ to 50¢ 10¢

Tea Kettles—

Galvanized Tea Kettles:
Inch.....6 7 8 9
Each.....15¢ 50¢ 55¢ 55¢

Steel Hollow Ware.

Avery Spiders & Griddles.....25¢ to 25¢ 55¢
Avery Kettles.....90¢
Porcelain.....50¢ to 50¢ 10¢
Never Break Spiders and Griddles.....
65¢ to 65¢ 10¢
Never Break Kettles.....60¢ to 60¢ 10¢
Solid Steel Spiders & Griddles.....65¢ to 65¢
Solid Steel Kettles.....60¢ to 60¢ 10¢
Solid Steel Ware, Enameled.....50¢ to 55¢

Silver Plated Hollow—

William Rogers Mfg. Co.....40¢ to 10¢

Washboards—

Solid Zinc.....per doz.
Crescent, family size, bent frame.....\$3.00
Red Star, laundry size, stationary
protector.....\$4.25

Double Zinc Surface:

Saginaw Globe, family size, station-
ary protector.....\$3.65
Wilson, family size, bent frame.....\$2.75

Washers—**Leather, Axle—**

Solid.....80¢10¢10¢85¢
 Patent.....85¢10¢85¢
 Coil: 1 1 1/4 1 1/2 1 3/4 1 1/2 Inch.
 1/2 1 1/2 1 3/4 1 1/2 per 100

Iron or Steel—

Size bolt.... 5-16 3/4 1/2 3/4 3/4
 Washers.....\$5.00 4.70 3.10 3.20 5.00
 In lots less than one keg add 1/4¢ per lb., 5-lb. boxes add 1/4¢ to list.

Cast washers—

Over 1/2 inch, barrel lots.....per lb., 2¢

Washer Cutters—

See Cutters, Washer.

Washing Machines—

See Machines, Washing.

Water Coolers—

See Coolers, Water.

Weaners—

Tyler's New Halter—No. 1 1/2 doz. \$3.45;
 No. 2, \$3.70; No. 3, \$4.00; No. 4, \$4.30
 Tyler's Safety—Nos. 1 and 2, 1/2 doz. \$1.70;
 No. 3, \$2.00; No. 4, \$2.30.

Wedges—

Oil Finish.....lb. 3 1/4¢
 Aze Finish.....lb. 4¢

Weights, Sash—

Eastern prices.....\$25.00

Western prices.....\$20.00

NOTE.—There is a wide difference in prices East and West, and some Foundries are naming lower prices than the above.

Well Buckets, Galvanized

See Pails, Galvanized.

Wheels Well—

8-in., \$1.75@1.85; 10-in., \$2.35@2.55;
 12-in., \$2.75@2.95; 14-in., \$3.25@3.45

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70¢10¢

Brt. and Ann., 10 to 18.....72 1/2¢5¢

Brt. and Ann., 19 to 26.....75¢7 1/2¢

Brt. and Ann., 27 to 36.....75¢10¢3 1/4¢

Cop'd and Galv., 6 to 9.....66 1/2¢5¢

Cop'd and Galv., 10 to 18.....66 1/2¢70¢

Cop'd and Galv., 19 to 26.....70¢10¢

Cop'd and Galv., 27 to 36.....72 1/2¢5¢

Tinned, 6 to 14.....70¢10¢5¢

Tinned, 15 to 18.....70¢10¢5¢

Tinned, 19 to 26.....70¢10¢

Tinned, 27 to 36.....65¢10¢

Annealed Wire on Spools.....60¢10¢10¢70¢

Brass and Copper Wire on Spools.....50¢10¢60¢

Brass, list Feb. 26, '96.....20¢

Copper, list Feb. 26, '96.....15¢

Cast Steel Wire.....50¢

Stub's Steel Wire.....\$5.00 to \$2.40

Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—

Iron and Brass, list July 1, 1899.....

85¢10¢85¢10¢5¢

Wire Cloth and Netting—

Galvanized Wire Netting 30¢10¢5¢2¢

Painted Screen Cloth per 100 ft.....

1.30@1.40

Hardware Grade, Iron:

2 to 20 mesh.....sq. ft. 2 1/2¢3¢

20 to 20 mesh.....sq. ft. 3¢3 1/4¢

Galv. Hardware Grade, 2 to 5 mesh.....

sq. ft. 3 1/4¢3 1/2¢

Galv. Hardware Grade, 6 to 8 mesh.....

sq. ft. 4¢4 1/4¢

Wire Barb—See Trade Report.**Wire, Rope—See Rope, Wire.****Wrenches—**

Agricultural.....70¢10¢70¢10¢5¢

Baxter's S.....60¢10¢

Cos' Genuine.....40¢10¢5¢5¢

Cos' Mechanics.....40¢10¢5¢5¢

Ac ne.....60¢10¢

Alken's Pocket (Bright).....50¢10¢

Alligator.....60¢10¢10¢

Bemis & Call's.....35¢5¢

Adjustable S.....30¢10¢

Brigg's Pattern.....40¢5¢

Combination Black.....40¢5¢

Combination Bright.....40¢5¢

Cylinder or Gas Pipe.....40¢5¢

Extra Heavy.....40¢5¢

Merrick's Pattern.....50¢

No. 3 Pipe, Bright.....55¢

Bindley Automatic.....30¢

Boardman's.....35¢

Bull Doz. W. & R.....60¢10¢10¢

Donohue's Engineer.....40¢10¢

Eagle.....50¢10¢

Hercules.....70¢

Solid Handles, P. S. & W.....50¢10¢

Stevenson.....60¢10¢10¢

Wrought Goods—

Staples, Hooks, etc., list March 17

'92.....85¢5¢85¢10¢

Yokes, Neck—

Covert Saddlery Works, Trimmings 1.60&5¢

Covert Saddlery Works, Neck Yoke

Centers.....70¢

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters' list act

Zinc—

Sheet.....lb 5 1/4¢@7¢

PAINTS, OILS AND COLORS.—Wholesale Prices.**White Lead, Zinc, &c.**

Lead, Foreign white, in Oil.....74¢ 94¢

Lead, American White, in Oil.....61¢

Lots of 500 lb or over.....61¢

Lots less than 500 lb.....63¢

Lead, White, in oil, 25 lb tin

pails, add to keg price.....3¢

Lead, White, in oil, 12 1/2 lb tin

pails, add to keg price.....1¢

Lead, White, in oil, 1 to 5 lb as

sorted tins, add to keg price.....1¢

Lead White, Dry in bbls.....53¢

Lead, American. Terms: On lots of 500

lbs. and over, 60 days, or 2% for cash if

paid in 15 days from date of invoice.

Zinc, American, dry.....43¢

Zinc, Paris, Red Seal, dry.....43¢

Zinc, Paris, Green Seal, dry.....43¢

Zinc, Antwerp Red Seal, dry.....43¢

Zinc, Antwerp, Green Seal, dry.....43¢

Zinc, V. M. French, in Poppy Oil,

Green Seal.....11¢12 1/2¢

Lots of 1 ton and over.....11¢12 1/2¢

Zinc, V. M. French, in Poppy Oil,

Red Seal.....10¢11 1/2¢

Lots of 1 ton and over.....10¢11 1/2¢

Discounts.—V. M. French Zinc.—Dis-

counts to buyers of 10 bbl. lots of one or

assorted grades, 1%: 25 bbls., 2%: 50

bbls., 4%.

Dry Colors.

Black, Carbon.....3¢ 8¢20

Black, Drop, Amer.....3 1/4¢4

Black, Drop, Eng.....7¢11

Black, Ivory.....15¢21

Lamp, Com.....3¢5

Blue, Cobalt.....3¢5 1/2¢8

Blue, Chinese.....35¢40

Blue, Prussian.....30¢38

Blue, Ultramarine.....3¢35

Brown, Spanish.....1¢1 1/2¢

Brown, Vandyke, Amer.....14¢24

Brown, Vandyke, Foreign.....24¢34

Carmine, No. 40.....\$2.15@2.75

Green, Chrome, ordinary.....5¢

Green, Chrome, pure.....18¢29

Lead, Red, bbls. 1/2 bbls. and kegs:

Lots 500 lb or over.....61¢

Lots less than 500 lb.....63¢

Litharge, bbls. 1/2 bbls. and kegs:

Lots 500 lb or over.....61¢

Lots less than 500 lb.....63¢

Ocher, French Washed.....14¢24

Ocher, Dutch Washed.....14¢24

Ocher, American.....\$10.00@15.00

Orange Mineral, English.....\$10.00

Orange Mineral, French.....11¢11 1/2¢

Orange Mineral, German.....8 1/2¢9

Orange Mineral, American.....8 1/2¢9

Red, Indian, English.....44¢84

Red, Indian, American.....3¢3 1/2¢

Red, Turkey, English.....4¢6

Red, Tuscan, English.....7¢10

Red, Venetian, Amer., \$100 lb.....80¢1.10

Red, Venetian, English, \$100 lb.....1.80@2.10

Sienna, Italian, Burnt and

Powdered.....34¢94

Sienna, Ital., Raw, Powd.....34¢74

Sienna, American, Raw.....14¢2

Sienna, American, Burnt and

Powdered.....14¢2

Talc, French.....\$100 lb \$1.25@1.60

Talc, American......90¢1.10

Terra Alba, French, \$100 lb......95¢1.00

Terra Alba, American No. 2......95¢1.00

Terra Alba, American No. 1......95¢1.00

Umber, Turkey, Bnt & Powd.....24¢34

Umber, Turkey, Raw & Powd.....24¢34

Umber, Bnt, Amer.....14¢2

Umber, Raw, Amer.....14¢2

Yellow, Chrome.....10¢25

Vermilion, American Lead.....10¢25

Vermilion, Quicksilver, bulk......97¢

Vermilion, Quicksilver, bags......97¢

Vermilion, English, Import......80¢95

Vermilion, Chinese......88¢95

Colors in Oil.

Black, Lampblack.....10¢14

Blue, Chinese.....30¢40

Blue, Prussian.....32¢38

Blue, Ultramarine.....13¢16

Brown, Vandyke.....9 1/4¢13

Green, Chrome.....8¢12

Green, Paris......9¢12

Sienna, Raw......10¢13

Sienna, Burnt......10¢13

Umber, Raw......9 1/4¢12

Umber, Burnt......9 1/4¢12

Miscellaneous.

Barytes, Foreign, \$100 ton.....\$12.00@21.00

Barytes, Amer. floated.....19.00@20.00

Barytes, Crude......9.00@10.00

Chalk, in bulk.....\$100 ton 2.60@2.75

Chalk, in bbls.....\$100 lb .35

China Clay, English, \$100 ton.....18.00@17.50

Cobalt, Oxide, \$100 lb.....2.25@2.50

Whiting, Common, \$100 lb......42¢.53

Whiting, Gliders......54¢.64

Whiting, extra Gliders......58¢.68

Putty.

In bulk.....\$1.90

In bladders.....2.40

In cans, 12 lb to 25 lb.....2.50

In cans, 1 lb to 5 lb.....3.60

Spirits Turpentine.

In Southern bbls.....@41 1/2¢

In machine bbls.....@42¢

Glue.

Low Grade.....\$12@15 1/2

Cabinet.....13 1/4¢16 1/2

Medium White.....14 1/4¢16 1/2

Extra White.....18¢23

French.....13¢40

Irish.....13 1/4¢16

Animal, Fish and Veget-

table Oils.

Linseed, City, raw.....\$ gal. 63¢ 64

Linseed, City, boiled.....65¢ 66

Linseed, S. ate and West'n, raw.....62¢

Linseed, raw Calcutta seed.....67¢

Lard, Prime.....55¢54

Lard, Extra No. 1.....48¢40

Lard, No. 1.....41¢43

Cotton-seed, Crude.....37¢

Cotton-seed, Summer Yellow,

prime.....30¢37 1/2

Cotton-seed Summer Yellow,

off grades.....35 1/2¢39

Sperm, Crude......35¢

Sperm, Natural Spring......35¢

Sperm, Bleached Spring......35¢

Sperm, Natural Winter......37¢

Sperm, Bleached Winter......37¢

Whale, Crude......38¢

Whale, Natural Winter......37¢

Whale, Bleached Winter......37¢

Menhaden, Crude, Sound......35¢

Menhaden, Light Strained......29¢30

Menhaden, Bleached Winter......35¢

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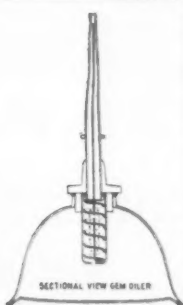
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We buy OLD METALS, OLD RUBBER PACKING, OLD HOSE, or any grade of SCRAP RUBBER.



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of the spout—
never occurs—
with the Gem.—
Do you see
the point?



GEM MANUFACTURING CO.,

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Book Notes

Portland Cement.—An authoritative German manual on the properties and uses of cement, compiled by L. Gollnelli, and published by the Association of German Portland Cement Manufacturers, has been given a full translation into English by S. B. Newberry, E.M.Ph.D. Numerous editions of the original were sold within a short time, and it is believed that the pamphlet, giving as it does results of late German research, will be useful to cement consumers here, especially to contractors and masons. The title is "How to Use Portland Cement." Paper. Price,

50 cents.

The Chemistry of Fire and Fire Prevention, by Herbert Ingle, F.I.C., F.C.S. This work is in substance a series of lectures delivered by the author to an audience composed of fire insurance men at Leeds, England. In response to the evident demand for a text-book dealing with the chemistry of fire insurance matters on the part of insurance men, works managers and others interested in the diminution of fire risks, these lectures in an extended and rearranged form are now published in a volume of 278 pages. It attempts to show as clearly as possible the danger risks from fire in the various manufacturing industries. The price is...\$2.50

The Calorific Power of Fuels.—The absence of any book in English on Calorific Powers of Fuel, how they are obtained and the uses made of them, has encouraged the publication of Mr. Herman Poole's work, as per title in the

caption above. The volume contains a full collection of tables of heats of combustion of fuels, solid, liquid and gaseous, comprising all the reliable data and tables on calorimetric determinations applying to fuel values. The leading calorimeters are described, those of first importance, notably coal, receiving special attention. The December, 1897, report of the Committee on Boiler Tests of the American Society of Mechanical Engineers is appended; also table of constants used. 279 pages, forty figures, cloth. Price.....\$3.00

Electrical Rules and Tables.—The usefulness and popularity of Monroe and Jamieson's Pocket Book of Electrical Rules and Tables as a reference has occasioned bringing out the fourteenth enlarged edition, revised. The new or recent matter includes numerous special articles and tables covering later developments in the science, and prepared by numerous experts. Part the first deals with the fundamental principles and measurements. The second part with their applications, including telegraphy, telephony, electric lighting and the transmission of power by electricity. The book contains 734 pages in very compact form (size for pocket). Leather. Price\$2.50

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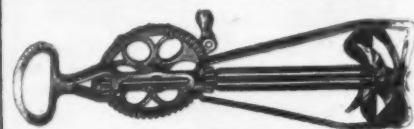
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An additional and exclusive feature of the **Star Food Chopper** is a plate hinged at the top of the hopper which, when pressed on the food to be cut, forces it upon the feed screw, thus preventing the possibility of injuring or soiling the fingers, which is liable to occur in using other choppers.

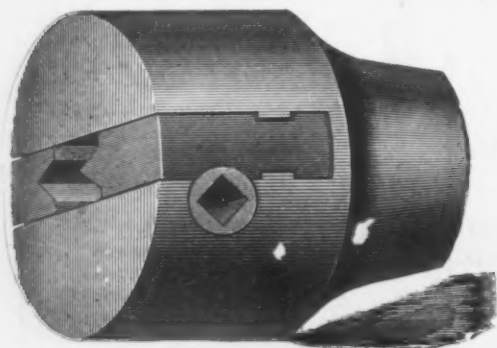
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No. 0 takes any drill from 0 to 1-2 inch inclusive.

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No. 2 " " " " 0 " 1 " "

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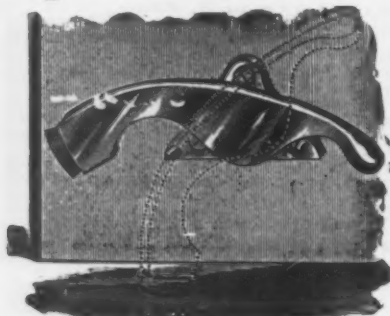
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143 MILK STREET, BOSTON.
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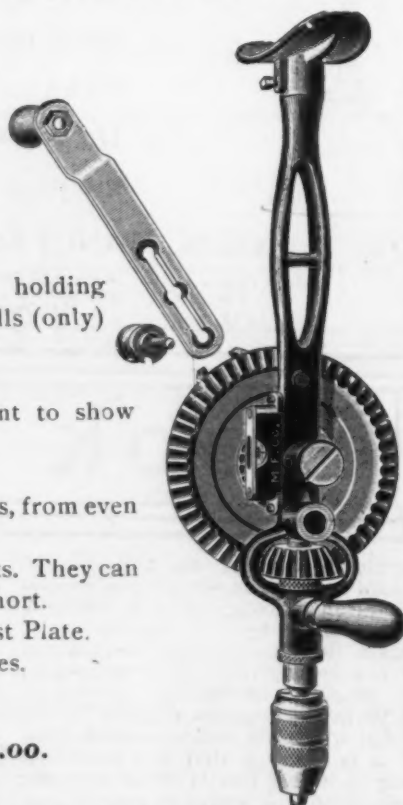
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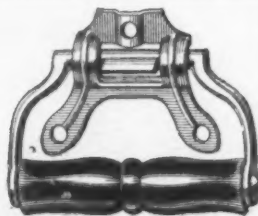
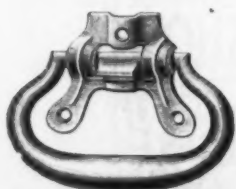


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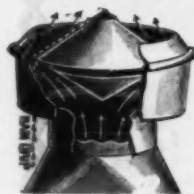
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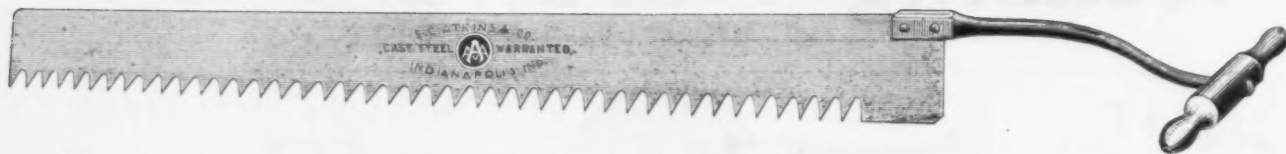
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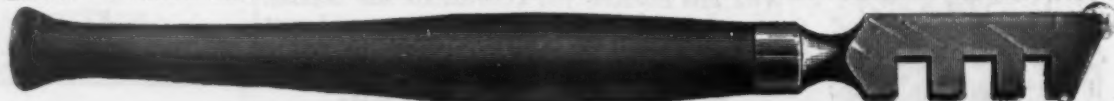
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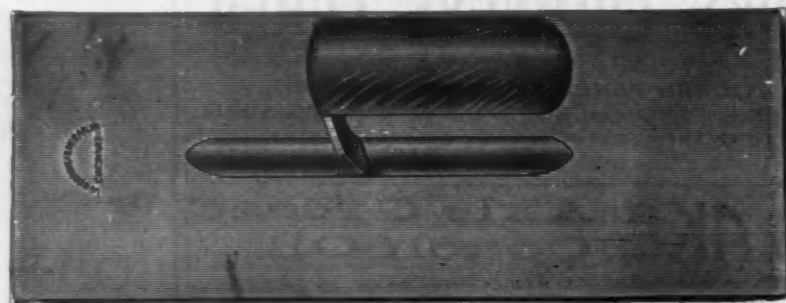
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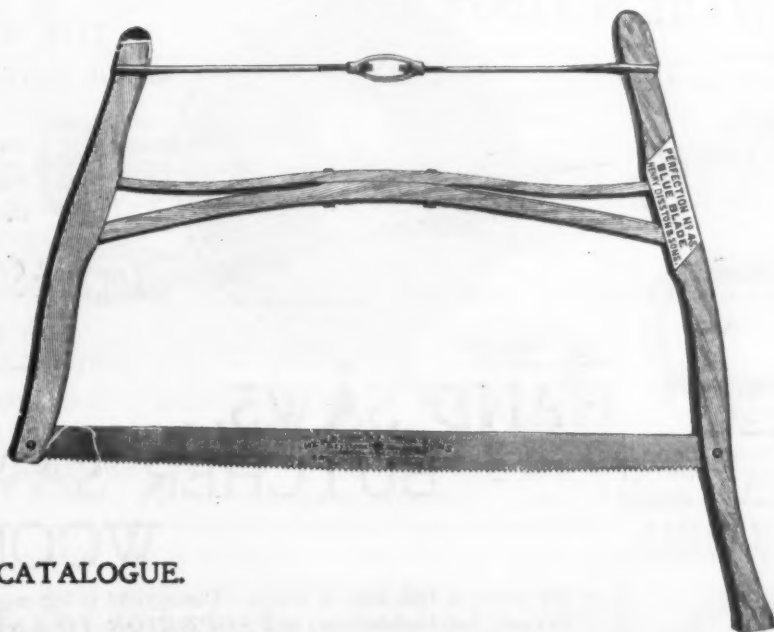
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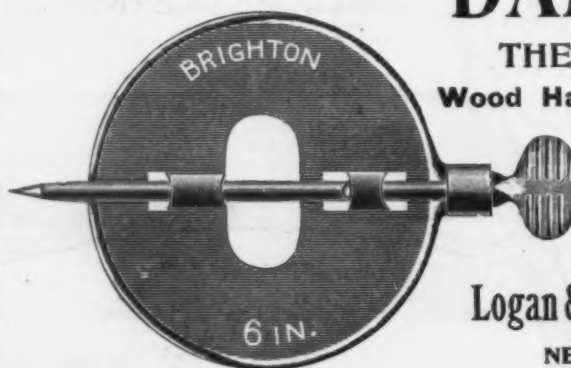
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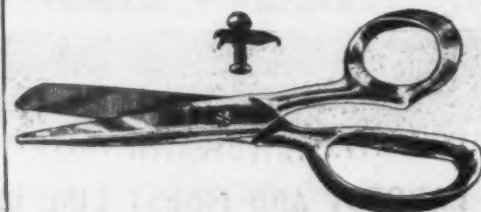
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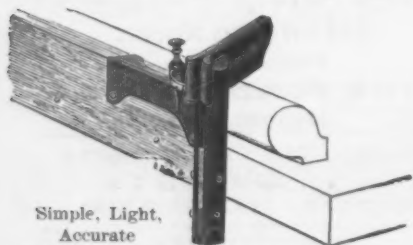


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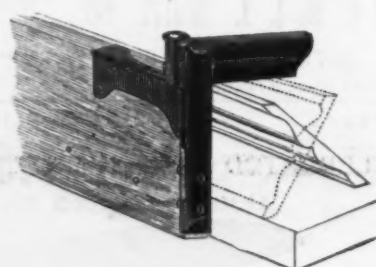


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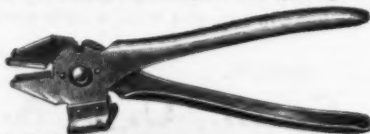
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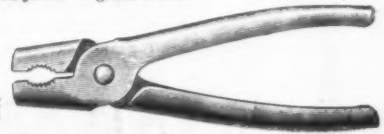
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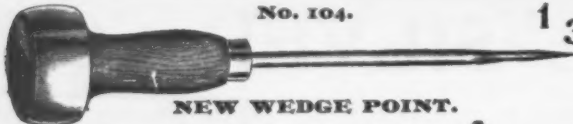


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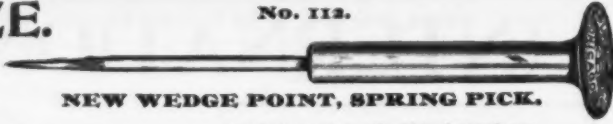
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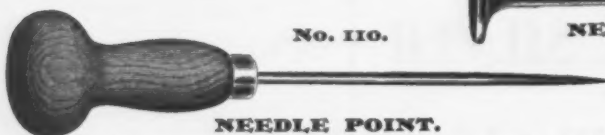
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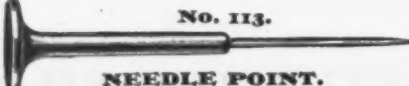
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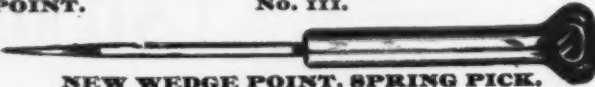
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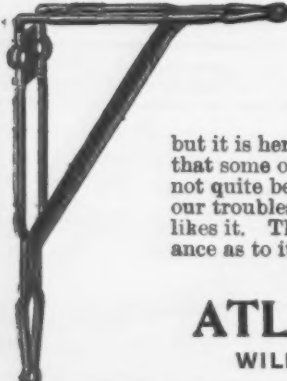
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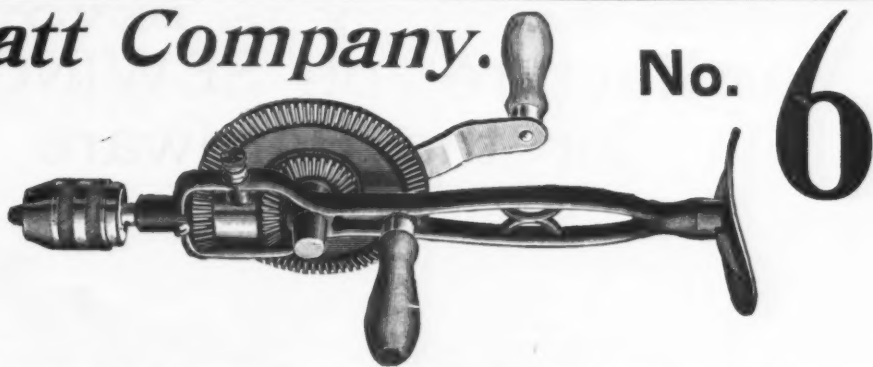
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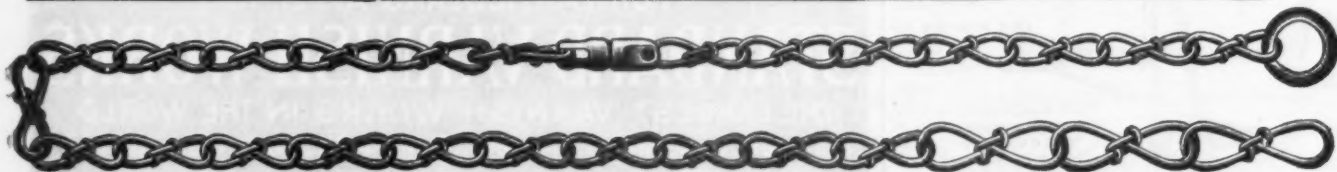
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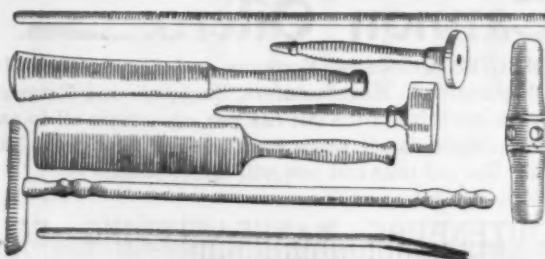


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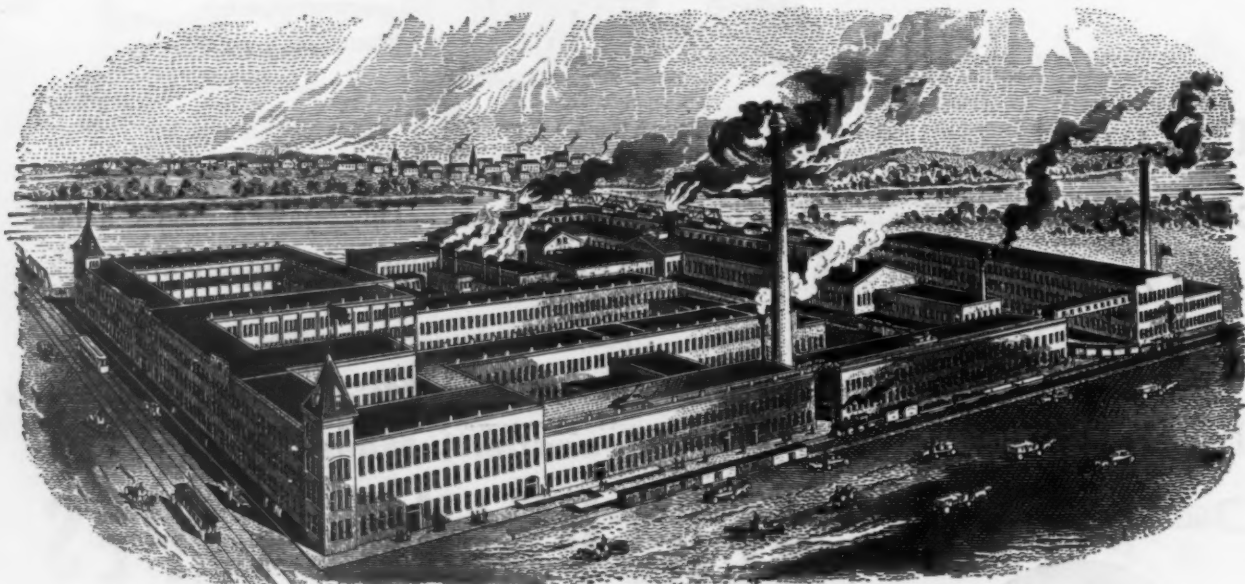
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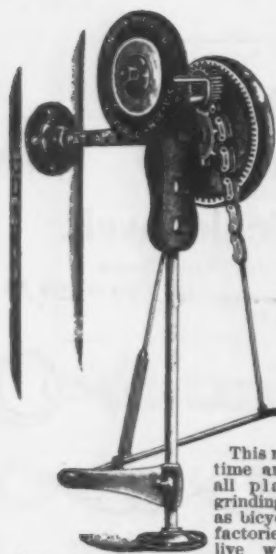
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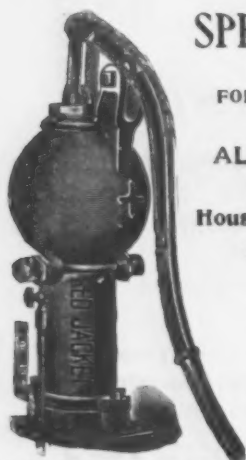
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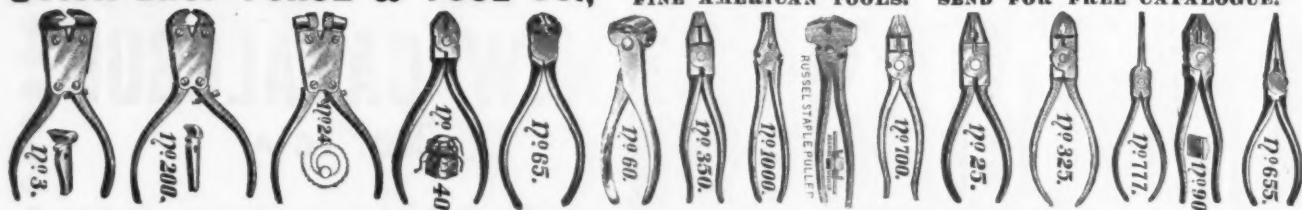
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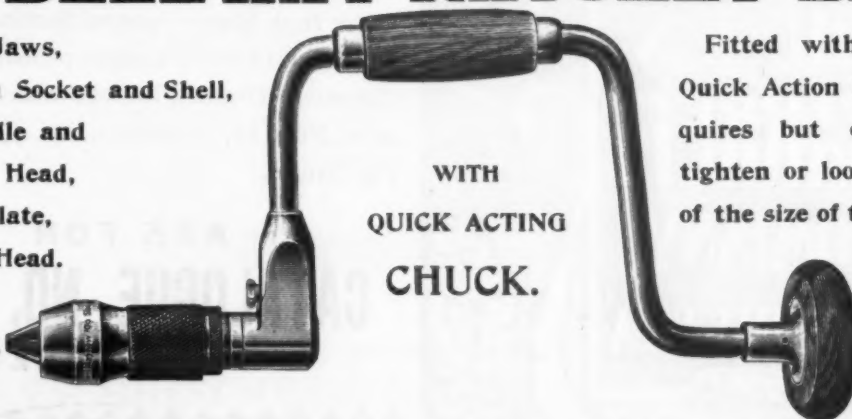
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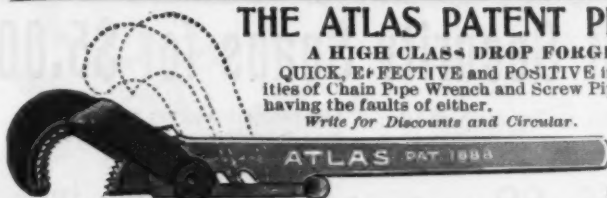


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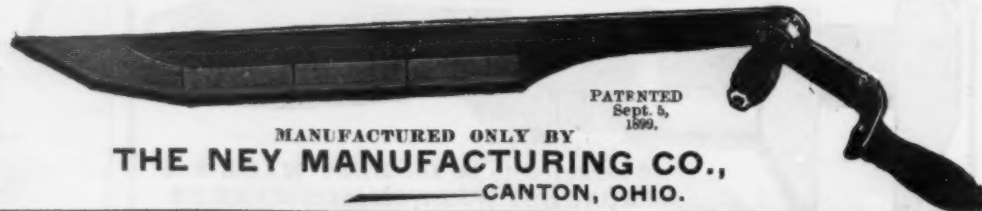
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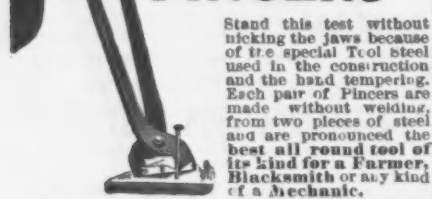


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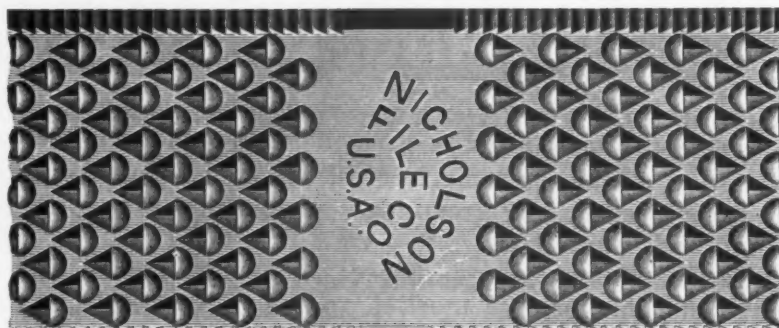
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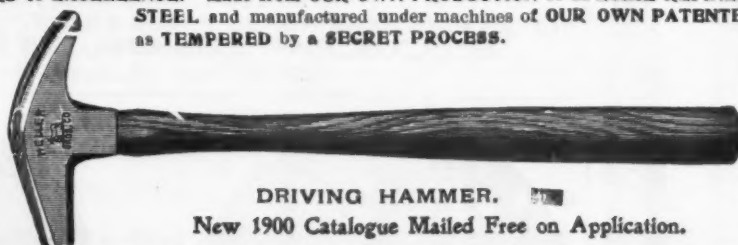
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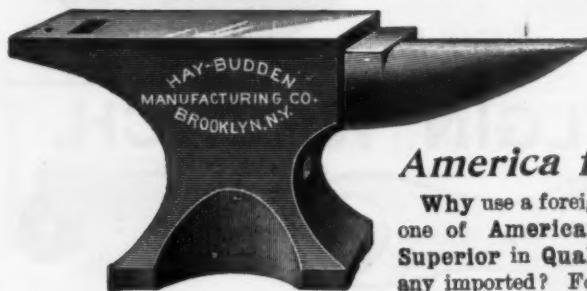


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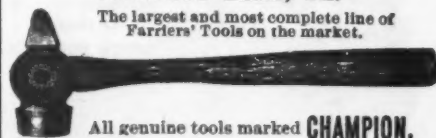
Superior to steel castings.

Our steel is made expressly and solely for us. Dies forged under our system will cut 10 to 25 % more blanks than others before regrinding.

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The largest and most complete line of
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All genuine tools marked CHAMPION.



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This saw is constructed with a tubular back, through which runs a string or a cable, connecting both ends of saw frame, which causes the blade to turn to any angle by turning the handle only without removing it from the work. Send for circular.

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THE ARCADE FILE WORKS at Anderson, Indiana, is the largest and most completely equipped plant for the manufacture of Files in the world.

The highest inventive genius and mechanical talent has been concentrated on ONE Modern Plant, which is directed by master minds—originators of a distinctly improved product—machinery and methods up-to-date.

Back of an Arcade File stands this guarantee: That our Arcade File will cut faster and wear longer than any other file on the market, and as an "earnest" of this guarantee, The Arcade File Works will send to any responsible Hardware Jobber, Wholesaler or Retailer, one dozen Arcade Files, to become the property of the receiver or returned at our expense if the guarantee is not fully borne out in every particular.

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Severance
Centering Tool,
PRICE \$2.00

Combination
Center Drills,
PRICE \$1.50 PER DOZ.

With these two tools you can center your work in two operations. It requires at least four in the old way.

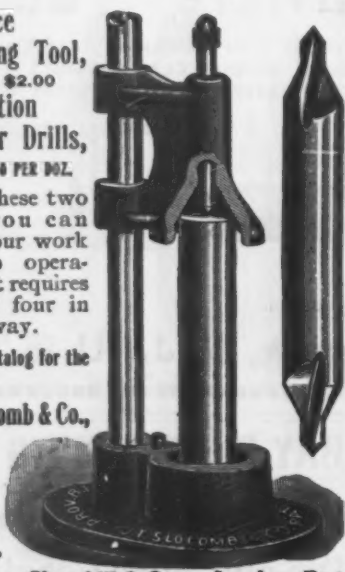
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Highest Award:
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Le COUNT'S Improved Adjustable Blocking.

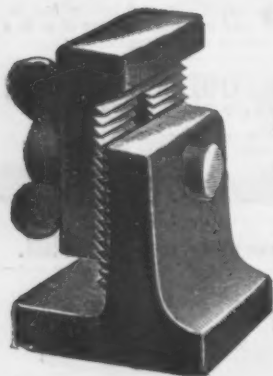
Manufactured by

**WM. G.
LE COUNT,**

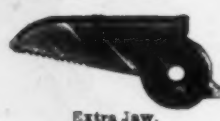
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SOUTH NORWALK,
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The best general purpose wrench on the market. It will turn a nut, hold a pipe or twist a rod. It is not clumsy, but flat and neat. It is the only adjustable wrench (with its range of work that can be conveniently carried in the pocket. When jaws wear out, old ones can be replaced with new Nickel plated and perfectly constructed. Write us for prices.

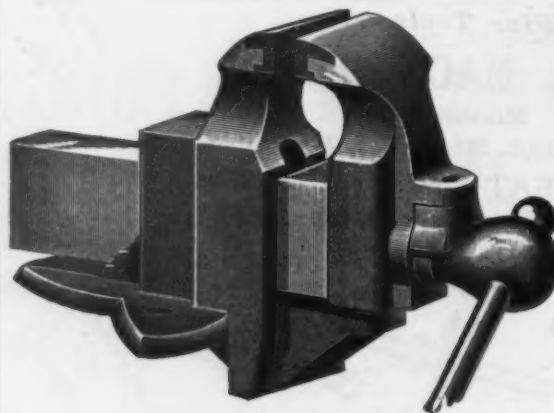
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Also Manufacturers of Passenger
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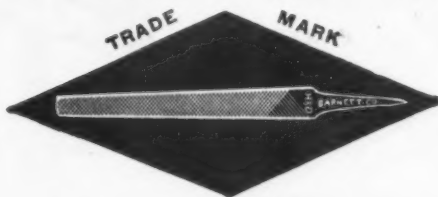
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STOP SCREWS and
WASHERS make a per-
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Window and Door Stops.
Also for Marble and Tile
Fasteners. Send for sam-
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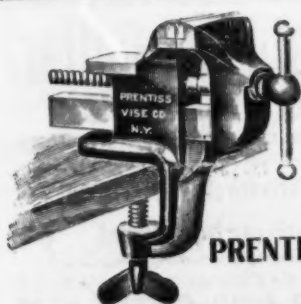


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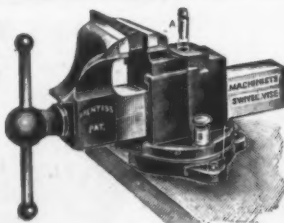
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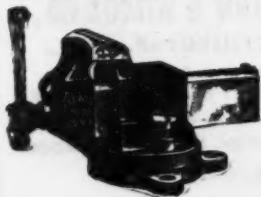
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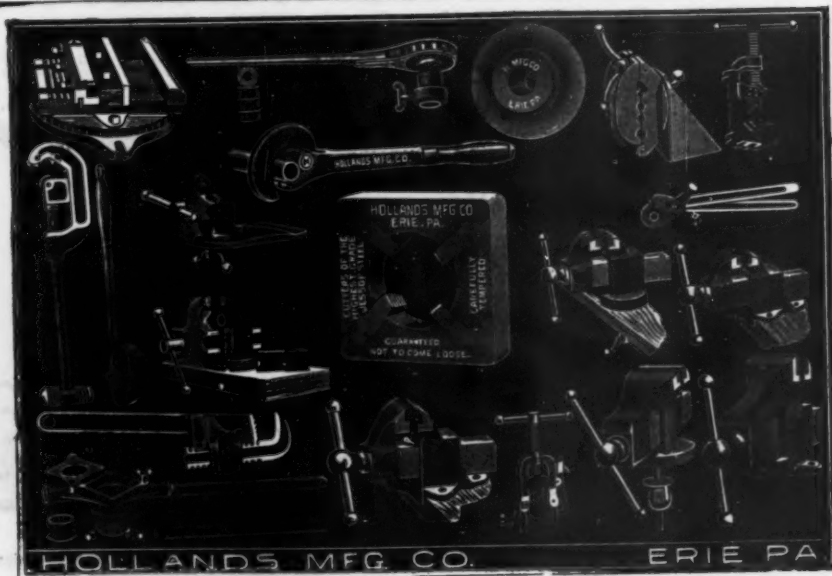
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Commence to draw as soon as
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has interchangeable jaws. Improved method of
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STEEL NAME STAMPS
Die Sinkers, Steel
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Set 30 has every good
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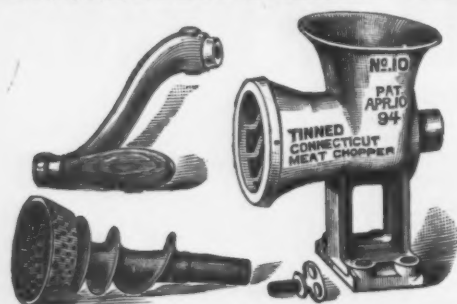
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CHOPS and
PULVERIZES.

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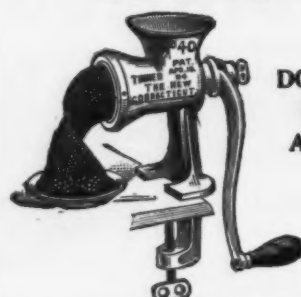
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DO IT ALL with a - -

SINGLE MACHINE.



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The Peoria Washers

are the strongest, best made machines for the purpose on the market to-day. They have Cedar Tubs with Galvanized Hoops. Inside castings, Tinned Malleable Iron. Leg brackets, malleable iron and bolted to tub with Tinned Bolts. Will wash as well as by hand, with less than $\frac{1}{8}$ the labor.

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S. W. CARD MFG. CO., Mansfield, Mass., say of it, "Giving perfect satisfaction and in our opinion is superior to anything we ever saw in the way of a time recorder."

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The original and up-to-date Fly Killer on the market. It has no equal. Flies cannot escape it. Will not crush, soil or mar the most delicate wall paper or ceiling. A Quick Seller. Good Profits. Trade sample on application. J. F. BIGELOW, Mfr., Worcester, Mass.

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CUTS EVERYTHING EDIBLE.

CUTS FINE OR COARSE JUST AS NEEDED.

Cutting Parts are of Tempered Steel.

All Parts can be Duplicated.

THE MOST SATISFACTORY FAMILY
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MANUFACTURED BY

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"BROWN" COW TIES.



Our Cow Ties are unquestionably the most reliable and attractive stable fixtures that this or any other country can produce. Every part is made from best grade of steel and by patented WELDLESS PROCESSES.

THEY WILL PLEASE YOUR CUSTOMERS.

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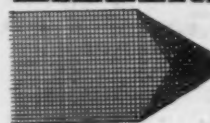
THE "KING" FLY KILLER.

KILLS without crushing, and no danger of soiling
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KING FLY KILLER is almost invisible, so flies
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Retail at 15 Cts.

Sample free to dealers.

Non-Breakable Handles

For Mrs. Potts'

COLD HANDLE IRONS



FAC-SIMILE OF HANDLE

If you want the kind that will NOT break

BUY THE "ENTERPRISE"

with FORGED IRON STRETCHER

It is "THE BEST"

All sets of "ENTERPRISE" Cold Handle Irons are equipped with
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Insist on your Jobber supplying you with
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**Strongest, Best and Most Handsome
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NO BUCKLING OR BENDING.

CORRUGATED ON BOTH SIDES AND BOTTOM.

SIDES MAY BE USED AS A WASH BOARD.

We make all descriptions of Piced, Heavy Polished, Stamped, Japanned
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FOUR SIZES.

Number	0	1	2	3
Diameter at top, inches,	20 $\frac{3}{4}$	21 $\frac{1}{4}$	23 $\frac{3}{4}$	24 $\frac{3}{4}$
Diameter at bottom, inches,	16 $\frac{3}{4}$	18	19 $\frac{3}{4}$	21
Capacity, quarts,	44	52	62	71

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KEEN & HAGERTY MFG. CO.



The Sterling Chopper,

AND

The Sterling Slicer.

TWO UNEQUALED KITCHEN TOOLS.

Have you seen the slicer? It's just out.

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The MILBRADT ROLLING

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LADDERS

have the highest recommendation from thousands of customers. They are the handsomest and easiest-running ladders made: work noiselessly and are absolutely safe and durable. Ladders are made to order and to fit all kinds of shelving, in various styles, to suit all purposes.

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PERFECT SHELF BOXESWE MAKE
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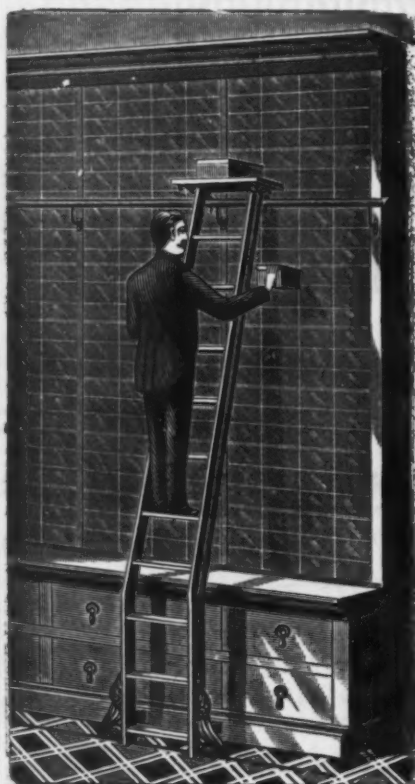
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U. S. Spring Clothes Pin will not damage fabric.



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PORTABLE
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Also the best
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Especially adapted for Hardware Stores.

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us THE BICYCLE STEP LADDER CO., 65 Randolph St., Chicago, Ill. Eastern Agent, H. N. YOUNG, 9 Clinton Place, New York City. New York City and vicinity, E. J. HUSSEY & CO., 80 John St. New York City. California, JOHN WOODLOCK, 54-156 First St., San Francisco, Cal. North Western States, HOWE SCALE CO. Portland, Ore. Texas and S. W., E. D. FOY, Dallas, Tex.



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LOCK-CORNER
SHELF BOXES
For the Hardware Trade.
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ANY SIZE TO
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MANUFACTURERS OF

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Seamless—SAVORY ROASTERS—Patented



THE BEST TO USE—BECAUSE—

Bottom is raised off the oven, so meat will cook evenly on all sides and cannot burn. Needs no water, no grease, no attention.

THE ONLY SELF-BASTING ROASTER—BECAUSE—

Bottom is OVAL and juice from meat flows to the lowest point where it is vaporized and deposited again on the surface of the meat.

THE EASIEST TO CLEAN—BECAUSE—

It is perfectly smooth and seamless inside, with NO CORNERS OR SEAMS TO COLLECT BURNED GREASE. An excellent seller to those who want a GOOD ROASTER.

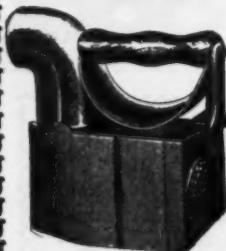
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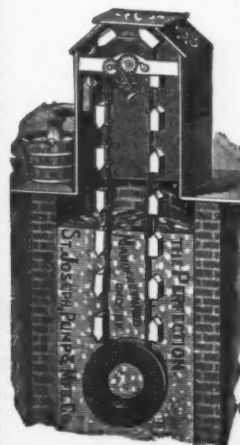
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House Furnishing Specialties and
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SURPLESS, DUNN & CO., 55 Warren St., New York,
Export Sales Agents.

You know that



the bulk of water for drinking purposes is consumed during the summer months. Sell your trade a

WATER PURIFIER,

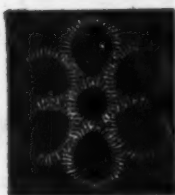
something that sets water a-sparkling with fresh air every time the wheel goes round. First-class Hardware, Pump and Implement Jobbers all know a good thing and handle the

**"Perfection"
Bucket Pump**

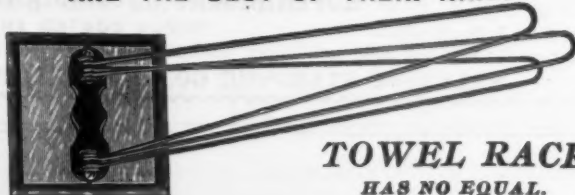
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**ESPECIALLY
CONVENIENT
FOR
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PRESSING.**

Send
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NATIONAL SPECIALTY MFG. CO., Lehigh Ave. and Third St., Philadelphia, Pa.

**The Virginia Rotary
Washing Machine.**

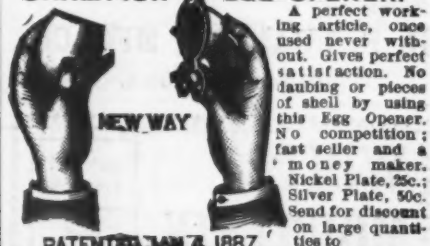


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Easy Running. Simple. Made of
Selected Virginia White Cedar.
Welded Wire Hoops.

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RICHMOND, VA.

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"WHITE MOUNTAINS" are gaining in popularity and demanded more every day. When the people find what is best, they WILL have them.

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We are expert designers
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We want your order now...If it is only a small trial order to begin with...
and we know it will prove to you that our products are the best and most satisfactory sellers. Send to us for free samples of wares
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While we know that our wares are the best on the market for design, finish and durability, and that our price is always consistent, we nevertheless are spending thousands of dollars acquainting the buying public with their trade-names, thereby assisting you in making sales. You must recognize this fact, and to protect yourself you must carry a complete line of our make of goods.

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TRIPLE COATED ENAMELED WARES.

BELLAIRE STAMPING CO., HARVEY, ILLINOIS.

Why is the



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Because it is the only **ROTARY WASHER** that has **Revolving Steel Ball Gearing**, therefore light running and noiseless. No escape of steam; made of red cypress lumber; solid leg staves (not removable, breakable legs); wheel turns either way; dasher reverses automatically, cleaning clothes without rubbing them to pieces. Made to last.

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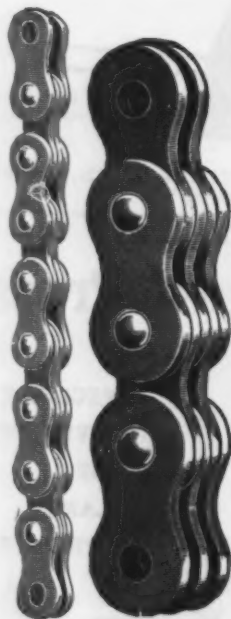
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SOLD BY ALL LEADING JOBBERS.
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THE WHITE MOUNTAIN FREEZER CO.,
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Quickest
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Best
Results

Economical
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No. 40. No. 6.
Actual Size.

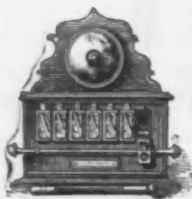
CABLE CHAINS.

No. 110	Copper	for Sash	of 400 lbs.
No. 10	"	"	" 250 "
No. 30	"	"	" 125 "
No. 40	"	"	" 75 "
No. 6	Steel.		
No. 60	"		
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**Transom Chains,
Window Sash Pulleys,
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*Write for Catalogue of Hardware
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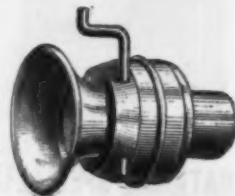


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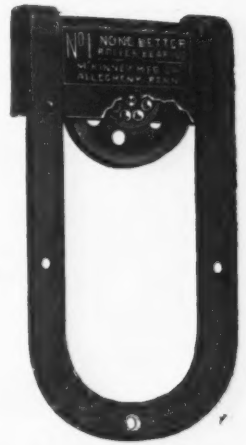
Complete outfits of Speaking Tubes, Whistles, Elec-
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DeKalb Ave., near Knickerbocker, Brooklyn, N. Y.



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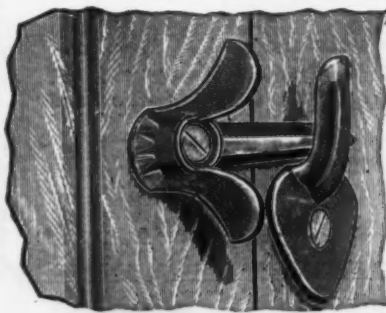
Door Hangers,
Door Track and Stay Rollers,
Door Hinges and Butts,
Felloe Plates and Washers,
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McKINNEY MFG. CO.,
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DO YOU know what a Poised Carrier is? If not, buy and sell the Coburn Rolling Door Hangers and you will get them, and you do not get them with any other make. They will when used in conjunction with the Coburn Round Trough Trolley Track be found to be the "*Ne Plus Ultra*" in door hangers.

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The Fearn Casement Fast.

Especially useful on Cellar and Attic Hinged Sash.

List Price \$6.00 per gross.

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COLUMBUS SASH RIBBON CO.,
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Automatically Regulated
Liquid Door Check and Spring.



Easily Applied.

Positively Regulated.

Refilled Without Removing.

Cannot Leak.

The ONLY Check that FULLY controls the Door.

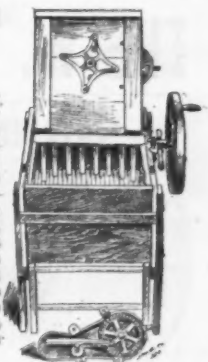
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No complicated gearing to get out of order or broken. Simply one large pinion fastened on the shaft or cover; one small pinion attached to the post; another small pinion meshing in the large one attached to shaft, and the Rack Bar; that's all. Washer operates right or left, the large hand wheel is attached to side of tub, does not have to be lifted with the cover; when later is down it is always ready for business.



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COFFEE MILLS.

Large Variety of

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SCREWS,
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- No. 3, RAILROAD HANGERS.
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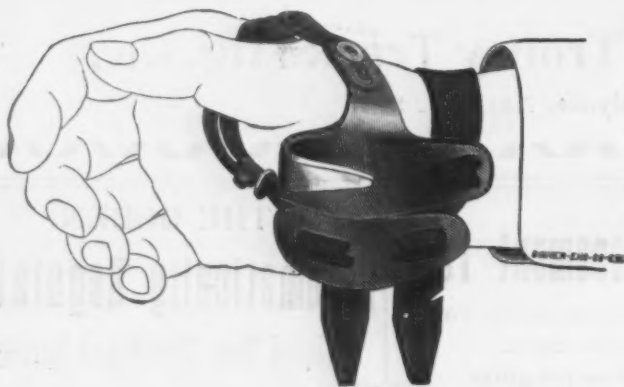
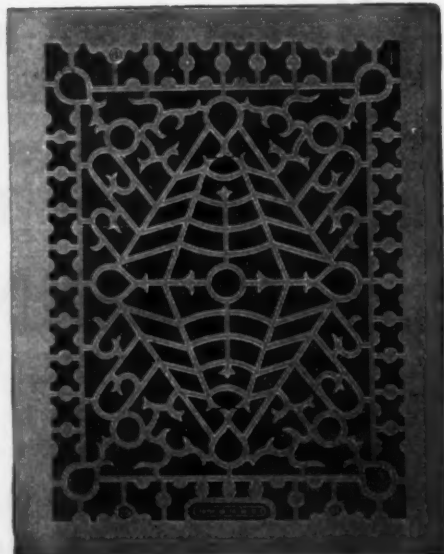
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Saves half the labor.

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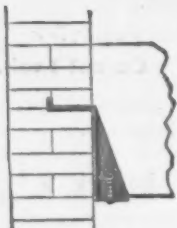
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With steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon."
Mechanically perfect yet simple in construction. 3 1/4 inch wheels. Track of double strength of others and reversible. Each door can be raised or shoved outward independent of the other, or held rigid as desired—an especial feature in the "Stayon" hanger.
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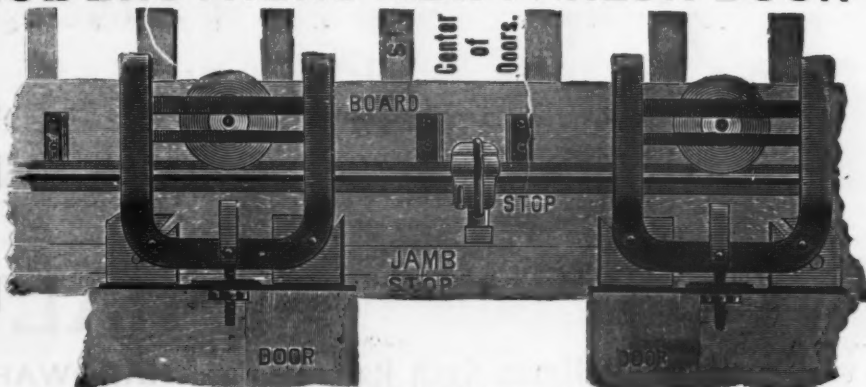
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Steel
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Vulcanized Hard
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Double Flanged
Steel Rail.



Perfectly
Noiseless,
Hanger Frame will
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No Rights or Lefts.
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Manufacturers of Steel Strap Hinges, Door Hangers,
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To secure the best device on the market for hanging sliding doors, order the McCabe Ball-Bearing Door Hanger. Write for catalogue and prices. The McCabe Hanger Mfg. Co., 540 W. 22d Street, New York.

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Square and Round Weights Hang exactly from centre. Only 10 inch pockets required. Eliminates use of lead weight.

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with one-sixth the stock required in one piece weights can fill any order. Weight crated with 100 lbs in a box, both plainly marked.

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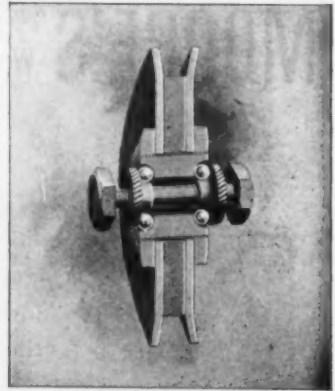
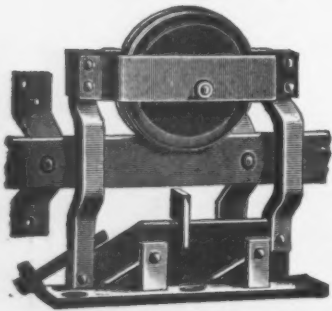
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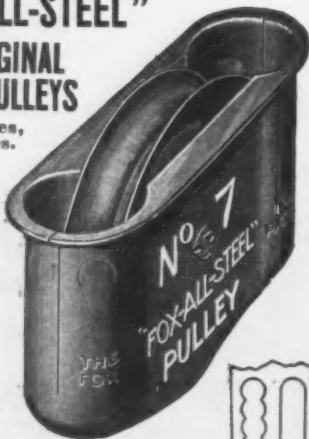


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Two Styles,
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LIGHT
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2 1/2 in. Wheel, for EIGHT or FOUR HOLE
OF STRAIGHT SIDE MACHINE MORTISE.
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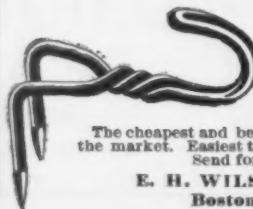
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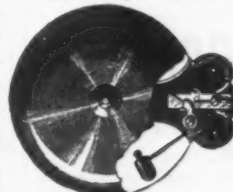
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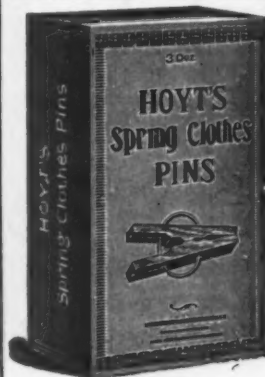
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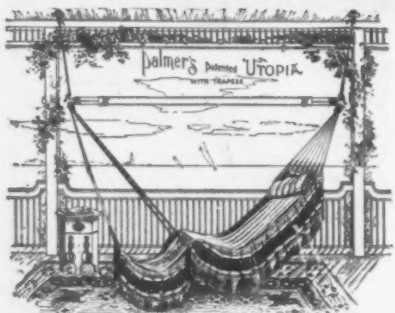


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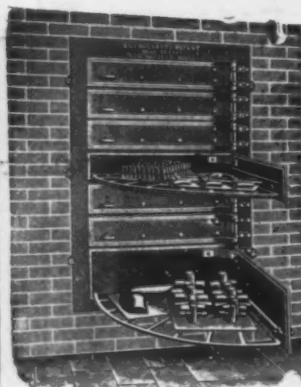
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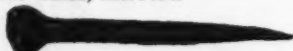
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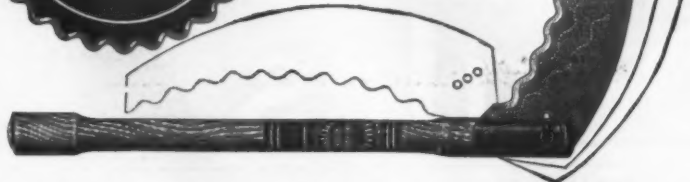


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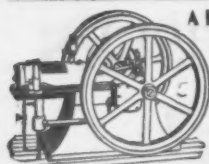
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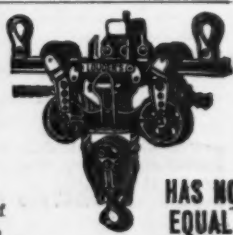
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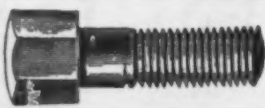


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Union Metallic Cartridge Co., 313-315 Broadway, N. Y.

Annealing Boxes

Warren City Boiler Wks., Warren, O.

Anti-Friction Metals—See Babbitt Metal**Anti-Rust**

Hunter Chemical Co., Phila., Pa.

Anvils

Chicago House Wrecking Co., Chicago.
Hay-Budden Mfg. Co., Brooklyn, N. Y.

Anvil and Vise (Combination)

Fulton Iron & Eng. Works, Detroit, Mich.

Apple Parers

Goodell Co., Antrim, N. H.
Hudson Parer Co., Leominster, Mass.
Reading Hardware Co., Reading, Pa.

Appraisers

American Appraisal Co., Milwaukee.

Aprons, Leather

Hull & Hoyt Co., Danbury, Conn.

Arbor Press

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Are Lamps

General Electric Co., Schenectady, N. Y.

Auctioneers

Bissell, E. & Co., N. Y.

Auger Bits

Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Ford Bit Co., Holyoke, Mass.
Jennings, Russell Mfg. Co., Deep River, Conn.

Jennings, C. E. Co., 101 Reade St., N. Y.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Pugh, Joe T., Phila., Pa.
Snell Mfg. Co., Fiskdale, Mass.

Automatic Machines

Automatic Mch. Co., Bridgeport, Conn.
Cross & Spels Machine Co., Waterbury, Conn.

Manville, E. J. Mch. Co., Waterbury, Ct.
Nelson, A. H. Mch. Co., Bridgeport, Ct.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Automobile Parts

Livermore, Homer F., Boston, Mass.

Awning Hardware

Garland Chain Co., Hankin, Pa.

Awning Hooks

Wheeling Hinge Co., Wheeling, W. Va.

Axe Wedges

Woodruff, W. W. & Sons, Mt. Carmel, Ct.

Babbitt Metal

Hertz, T. & Son, St. Louis, Mo.
Magnolia Metal Co., 265-267 West St., N. Y.

Marble Lead Works, St. Louis, Mo.
Merchant & Co., Inc., Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Shimer, H. M. & Co., Phila., Pa.
Shonberger, L., 172 Hudson St., N. Y.

Syracuse Smelting Wks., Syracuse, N. Y.

Bale Ties

Griswold Wire Co., Braddock, Pa.
Klimer Wire Mfg. Co., Chicago, Ill.
Wilson, H. P. & H. F., 377 59th Ave., N. Y.

Ball Floats

Naugatuck Mfg. Co., Naugatuck, Conn.

Bank and Office Railing

Eave Wire Works Co., 65 Fulton St., N. Y.

Barb Wire and Fence

Dillon-Griswold Wire Co., Sterling, Ill.

Bar Iron

Allentown Rolling Mill, Allentown, Pa.
American Iron & Steel Mfg. Co., Lebanon, Pa.
American Steel Hoop Co., Battery Park Building, N. Y.

Burden Iron Co., Troy, N. Y.
Champion Iron & Steel Co., Muskegon, Mich.
Consolidated Iron & Steel Co., Bristol, Pa.

Lockhart Iron & Steel Co., Pittsburgh, Pa.
Lohan Iron & Steel Co., Burnham, Pa.
National Steel Co., Bridgeport, O.

Republic Iron & Steel Co., Chicago, Ill.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Iron, Coal & Coke Co., Bristol, Va.—Tenn.

Bearings

Hall Bearing Co., Boston, Mass.

Beet Topping Knives

Arkine, E. C. & Co., Indianapolis, Ind.

Bellows

Scott, Geo. M., Chicago, Ill.

Bells and Gongs

Bevin Bros. Mfg. Co., East Hampton, Ct.
Gong Bell Mfg. Co., E. Hampton, Ct.
Hill, N. N. Brass Co., E. Hampton, Ct.
Mossberg, Frank Co., Attleboro, Mass.
Starr Bros. Bell Co., Easthampton, Ct.

Belt Dressing

Dixon, Jos., Crucible Co., Jersey City, N. J.

Belt Hooks

Bristol Co., Waterbury, Conn.

Talcott, W. O. Providence, R. I.

Belt Studs

Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Belting

Alexander Bros., 412 N. 3d, Phila., Pa.
Ames Sword Co., Chicopee, Mass.
Boston Belting Co., Boston, Mass.
Machinery's Supply Co., Rochester, N. Y.
Peerless Rubber Mfg. Co., 16 Warren St., New York.
Shultz Belting Co., St. Louis, Mo.

Belting, Chain

Fuhl Malleable Co., Detroit, Mich.
Jeffrey Mfg. Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Bending Rolls

Hilles & Jones Co., Wilmington, Del.
New Doty Mfg. Co., Janesville, Wis.
Niles Tool Works Co., 136-138 Liberty St., N. Y.

Bicycles

Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
Remington Arms Co., Ilion, N. Y.
Supplee Hdw. Co., Phila., Pa.

Bicycle Bells—See Bells and Gongs**Bicycle Chains**

Bridgeport Chain Co., Bridgeport, Ct.

Bicycle Lamps

Bridgeport Brass Co., Bridgeport, Conn.
Plume & Atwood Mfg. Co., 29 Murray St., New York.

Bicycle Machinery

Bliss, E. W. Co., Brooklyn, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Garvin Mach. Co., Spring and Varick Sts., New York.

Pratt & Whitney Co., Hartford, Conn.

Bicycle Parts

Davis & Buxton Stamping Co., Worcester, Mass.
Houghton & Buxton Mfg. Co., Worcester, Mass.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Springfield Machine Screw Co., Springfield, Mass.

Standard Tool Co., Cleveland, O.

Bicycle Spokes

Excelsior Needle Co., Torrington, Ct.

Bicycle Sundries

Bevin Bros. Mfg. Co., E. Hampton, Mass.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hill, N. N. Brass Co., E. Hampton, Ct.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Smith & Esge Mfg. Co., Bridgeport, Ct.

Supplee Hdw. Co., Phila., Pa.

Bicycle Wrenches

Springfield Drop Forging Co., Springfield, Mass.
Star Mfg. Co., Carpentersville, Ill.

Binder Twine

American Mfg. Co., 65 Wall St., N. Y.

Bird Cages

Hendryx, Andrew B. Co., New Haven, Conn.

Bits

Conn. Valley Mfg. Co., Centerbrook, Ct.
Norton Mfg. Co., Chester, Conn.

Bit Braces

Mason & Parker, Winchendon, Mass.

Black Plate

American Tin Plate Co., N. Y.
Champion Iron & Steel Co., Muskegon, Mich.

Blast Forges

Miner & Peck Mfg. Co., New Haven, Ct.

Blocks, Tackle

Boston & Lockport Block Co., Boston.
Fulton Iron & Eng. Wks., Detroit, Mich.
Lane Bros. Co., Foughkeepsie, N. Y.

Blowers

American Blower Co., Detroit, Mich.
Asher, A., 109 Liberty St., N. Y.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.

Champion Blower & Forge Co., Lancaster, Pa.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York City.

Exeter Machine Wks., Boston, Mass.
N. Y. Blower Co., Bucyrus, O.
Servient, B. F. Co., Boston, Mass.

Wilbraham Baker Blower Co., Phila. Pa.

Boat Hardware

Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Boiler Makers' Machinery

Frentice Bros., Worcester, Mass.

Boiler Plates

Lukens Iron & Steel Co., Coatesville, Pa.
Seldel & Hastings Co., Wilmington, Del.

Boiler Tubes

Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
National Tube Co., Pittsburgh, Pa.

Boilers, Steam

Fabcock & Wilcox Co., 30 Cortlandt St.
Cahall Sales Dept., Pittsburgh, Pa.

Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. Co., Youngstown, O.
Watson, E. P., Elizabeth, N. J.
Wehrill, Robt. & Co., Chester, Pa.
Wood, Jno. Mfg. Co., Conshohocken, Pa.

Bolt Cutters

Chambers Bros., Philadelphia, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.

Bolt and Nut Machinery

Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Detrick & Harvey Mch. Co., Baltimore, Md.

Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, Ohio.

Bolts

American Iron & Steel Mfg. Co., Lebanon, Pa.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Franklin-Moore Co., Winsted, Conn.

Hall's Sam'l Sons, 229 W. 10th St., N. Y.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

Ladd, W. C., Bristol, Conn.
National Elastic Nut Co., Milwaukee, Wis.

Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.

Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Russell, Burdell & Ward, Port Chester, N. Y.

Shelton Co., Birmingham, Conn.

Books

Williams, David Company, 232-238 William Street, N. Y.

Boring and Turning Mills
Sellers, Wm. & Co., Inc., Phila., Pa.

Box Fixtures

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Box Hasps and Hinges

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Box Straps and Corners

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Boxes, Hdw. Shelf, &c.

Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.

Brackets, Shelf

Atlas Mfg. Co., New Haven, Conn.
Griffin Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Fdry. Co., Chicago, Ill.

Brass and Copper

Ansonia Brass & Copper Co., 90 John St., N. Y.

Bridgeport Brass Co., Bridgeport, Ct.
Daval, John & Sons, 100 John, N. Y.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Plume & Atwood Mfg. Co., 29 Murray St., N. Y.

Randolph-Clowes Co., Waterbury, Conn.
Rutter, A. T., 256 Broadway, N. Y.

Seville Mfg. Co., Waterbury, Conn.
Shimer, H. W. & Co., Phila., Pa.

Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Copper Wire

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Butt Hinges

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Butts

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders

Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Bread Knives

Hartzell, Emmert, Fairfield, Pa.

Breast Drills

Millers Falls Co., 23 Warren St., N. Y.

Bridge Builders

American Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.

Easter Bridge & Structural Co., Worcester, Mass.
Illinois Steel Co., Chicago, Ill.

New England Structural Co., Boston, Mass.
Scaife, Wm. B. & Sons, Pittsburgh.

Bronze Ingots

Syracuse Smelting Wks., Syracuse, N. Y.

Bronze, Manganese

Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze, Tobin

Ansonia Bronze & Copper Co., 99 John St., N. Y.

Brooms and Brushes

Osborn Mfg. Co., Cleveland, O.

Buffing Wheels

Divine Bros. Co., Utica, N. Y.

Buggies

Ferry Mfg. Co., Indianapolis, Ind.

Builders' Hardware

Reading Hardware Co., Reading, Pa.
Stanley Works, New Britain, Conn.
U. S. Steel Lock Co., Clinton, Iowa.

Bulldozers

Williams, White & Co., Moline, Ill.

Butchers' Saws

Dieston, Henry & Sons, Inc., Phila., Pa.
Goodell-Pratt Co., Greenfield, Mass.
Jennings, C. E. & Co., 101 Reade St., N. Y.

Butchers' Tools

Chattillon, John & Sons, 35-39 Cliff St., N. Y.

Goodell Co., Antrim, N. H.
Hartell Emmert, F. Ireland, Pa.

Butts and Hinges—See Hinges.

Calipers and Dividers

Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Cannon

Snow, L. T., New Haven, Conn.

Car Springs

Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon

Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains

Carborundum Co., Niagara Falls, N. Y.

Carborundum Wheels

- New England Steel Castings Co.**,
delphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio
Snaw, E. M., Providence, R. I.
Union Steel Casting Co., Pittsburgh, Pa.
- Ceilings, Metal**
Youngstown Iron & Steel Roofing Co.,
Youngstown, O.
- Cement Iron**
Smooth On Mfg. Co., Jersey City N. J.
- Cement Workers' Tools**
Ideal Tool Co., Indianapolis, Ind.
- Chain**
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.
Jenkins Iron & Tool Co., Howard, Pa.
Link-Belt Engineering Co., Phila., Pa.
McKay Jas. & Co., Pittsburgh, Pa.
Onedia Community, Ltd., Niagara Falls
Standard Chain Co., Pittsburgh, Pa.
- Chain Plants**
Turner, Vaughn & Taylor Co., Coya-
boga Falls, O.
- Chemicals**
Kimer & Amend, New York.
- Cherry Stoppers**
Enterprise Mfg. Co., Philadelphia, Pa.
Goodell Co., Antrim, N. H.
- Chisels**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
Jennings, C. F. Co., 101 Reade St., N. Y.
White, L. & I. J. Co., Buffalo, N. Y.
- Christmas Tree Holders**
North Bros. Mfg. Co., Philadelphia, Pa.
- Chucks**
Cushman Chuck Co., Hartford, Conn.
Doebler Mfg. Co., Middletown, Conn.
Goodell Pratt Co., Greenfield, Mass.
Hoggson & Pettis Mfg. Co., New Haven.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 108 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London,
- Cider Mills**
Whitehurst, R. W. & Co., Norfolk, Va.
- Circular Sawing Machines**
Kidder, R. E., Worcester, Mass.
- Clamps**
Beasley, C. H. & Co., Chicago, Ill.
Hall, Thos., Brooklyn, N. Y.
Hammer & Co., Branford, Conn.
- Clipping Machines**
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. E. Co., 36 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray
St., N. Y.
- Clothes Dryers**
Bill Dryer Co., Worcester, Mass.
- Clothes Line Hook**
Wilson, E. H. & Co., Allston, Mass.
- Clothes Pins**
Clark, J. B. Co., Minneapolis, Minn.
U. S. Clothes Pin Co., Montpelier, Vt.
- Coal**
Alabama Consolidated Coal & Iron Co.,
Birmingham, Ala.
Sloss Sheffield Steel & Iron Co., Bir-
mingham, Ala.
Washington Coal & Coke Co., Dawson,
Pa.
Wister, Francis, Philadelphia, Pa.
- Coal Cars**
Lansing Wheelbarrow Co., Lansing,
Mich.
- Coal Picks**
Jenkins Iron & Tool Co., Howard, Pa.
- Coal Shutes**
Lansing Wheelbarrow Co., Lansing,
Mich.
- Coffee and Spice Mills**
Arcade Mfg. Co., Freeport, Ill.
Parker, Chas. Co., Meriden, Conn.
- Coke**
Alabama Consolidated Coal & Iron Co.,
Birmingham, Ala.
Benecher Coke Co., Pittsburgh, Pa.
Cherry Valley Iron Co., Pittsburgh, Pa.
Dimmick, J. K. & Co., Phila., Pa.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Sloss Sheffield Steel & Iron Co., Bir-
mingham, Ala.
Tennessee Coal, Iron & R. R. Co., Bir-
mingham, Ala.
Virginia Iron, Coal & Coke Co., Bristol,
Va.—Tenn.
Washington Coal & Coke Co., Dawson,
Pa.
Wister, Francis, Philadelphia, Pa.
- Compressed Air Machinery**
Phila. Pneumatic Tool Co., Phila., Pa.
- Conductor Pipe**
Berger Bros. Co., Philadelphia, Pa.
- Conveying Machinery**
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine
Co., Cleveland, Ohio.
California Wire Works, San Francisco,
Du Bois Iron Works, Du Bois, Pa.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
- Cooking Utensils**
Cleveland Stamping & Tool Co., Cleve-
land, O.
- Coping Saw**
Jones & Dommersnas, Chicago, Ill.
- Copper**
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.
United Metals Selling Co., 11 Broadway,
N. Y.
- Copper Hammers**
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.
- Copper Rivets and Burrs**
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.
- Copper Tacks and Nails**
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.
- Cordage**
Macomber & White Rope Co., Chicago
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.
- Core Ovens**
Millet Core Oven Co., Brightwood, Mass.
- Cork Screws and Cork Pullers**
Erie Specialty Co., Erie, Pa.
- Corn Hooks**
Withington & Cooley Mfg. Co., Jackson,
Mich.
- Corn Huskers**
Wilcox Mfg. Co., Aurora, Ill.
- Corrugated Iron and Steel**
Garry Iron & Steel Roofing Co., Cleve-
land, O.
McCullough Iron Co., Wilmington, Del.
Scaife, Wm. B. & Sons, Pittsburgh.
- Cotter Pin Machines, Automatic**
Shuster, F. B. Co., New Haven, Conn.
- Cotton Ties**
American Steel Hoop Co., Battery Park
Building, N. Y.
- Counting Machines**
Durant, W. N. Milwaukee, Wis.
Hart, R. A., Battle Creek, Mich.
- Couplings, Compression**
Sennett, Geo. B. Co., Youngstown, O.
- Cow Ties**
Garland Chain Co., Rankin, Pa.
Onedia Community, Ltd., Niagara Falls,
- Cranes**
Brown Hoisting & Conveying Mch. Co.,
Cleveland, O.
Chisholm & Moore Mfg. Co., Cleveland,
Cleveland Crane & Car Co., Cleveland, O.
Niles Tool Works Co., 138-139 Liberty
St., N. Y.
Northern Engineering Works, Detroit,
Mich.
Pawling & Harnischfeger, Milwaukee,
Wis.
Pneumatic Crane Co., Pittsburgh, Pa.
Reading Crane & Hoist Wks., Reading,
Pa.
Ridgway, Craig & Son Co., Coatesville, Pa.
Spedel, J. G., Reading, Pa.
- Crayon**
Steward, D. M. Mfg. Co., Chattanooga,
Tenn.
- Crucibles**
Dixon, Jos. Crucible Co., Jersey City,
N. J.
- Cupolas**
Paxson, J. W. Co., Philadelphia, Pa.
- Curry Combs**
New York Stamping Co., Brooklyn, N. Y.
- Cutlery**
Cattaraugus Cutlery Co., Little Valley,
N. Y.
Chaillou, John & Sons, 95 to 99 Cliff St.,
N. Y.
Dane, Stoddard & Co., Boston.
Goodell Co., Antrim, N. H.
Kimball, C. J. Co., Bennington, N. H.
Smith & Remenway Co., 296 Broadway,
N. Y.
Wiebusch & Hilger, Ltd., 9 to 15 Murray
St., N. Y.
- Cutting Off Machines**
Hurlbut Rogers Mach. Co., So. Sudbury,
Mass.
- Cylinders, Air and Gas**
Harrisburg Pipe Bending Co., Harris-
burg, Pa.
- Dampers**
Logan & Strobbridge Iron Co., New
Brighton, Pa.
Williams, A. C., Ravenna, O.
- Diamond Tools**
Dickinson, Thos. L., 45 Vesey St., N. Y.
- Dies**
Adrian Mach. Works, Brooklyn, N. Y.
American Hdw. Mfg. Co., Ottawa, Ill.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracuta Mach. Co., Bridgeport, N. J.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Moesberg, Frank Co., Attleboro, Mass.
Richard Mfg. Co., Bloomsburg, Mass.
Wilson & Smith, Worcester, Mass.
- Door Belts.—See Belts and Gongs.**
- Door Checks and Springs**
Bardsley, Jos., 147 151 Baxter St., N. Y.
Ogden Mfg. Co., Newark, N. J.
Fullman Sash Balance Co., Rochester,
N. Y.
- Door Holders**
Caldwell Mfg. Co., Rochester, N. Y.
- Drain Springs**
Burditt & Williams, Boston, Mass.
- Draw Benches**
Richard Mfg. Co., Bloomsburg, Pa.
Thompson, Hugh L., Waterbury, Ct.
- Drill Grinders**
Heald, L. S. & Son, Barre, Mass.
Sellers, Wm. & Co., Inc., Phila., Pa.
Washburn Shops of Worcester Poly-
technic Inst., Worcester, Mass.
- Drilling Machines**
Barnes, R. F. Co., Rockford, Ill.
Barnes, W. F. & John Co., Rockford, Ill.
Baush Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Bullard Machine Tool Co., Bridgeport,
Ct.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancas-
ter, Pa.
Cincinnati Mch. Tool Co., Cincinnati, O.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., 131
Worth St., N. Y.
Davis, W. F., Machine Co., Rochester,
N. Y.
Detrick & Harvey Mch. Co., Baltimore,
Md.
- Foodie & Holloway Mach. Tool Co.,**
Incinnati, O.
Harrington, E. Son & Co., Phila., Pa.
Hill, Clarke & Co., Boston, Mass.
Hoefler Mfg. Co., Freeport, Ill.
Frenice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Shuster, F. B. Co., New Haven, Conn.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford,
Ct.
Stow Flexible Shaft Co., Phila., Pa.
Wiley & Russell Mfg. Co., Greenfield,
Mass.
York, S. M. Co., Cleveland, O.
- Drilling Machines, Automatic**
Gould & Eberhardt, Newark, N. J.
- Drive Chains**
Locke Steel Belt Co., Bridgeport, Conn.
- Drop Forgings**
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Chicago Drop Forging & Fdry. Co.,
Kenosha, Ill.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Consolidated Railway Electric Light-
ing & Equipment Co., 100 Broadway,
N. Y.
Eccles, Richard, Auburn, N. Y.
Indianapolis Drop Forging Co., Indian-
apolis, Ind.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Spring-
field, Mass.
Strieby & Foote Co., Newark, N. J.
Tranau & Williams Co., Alliance, O.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.
- Drop Hammers**
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Williams, White & Co., Moline, Ill.
- Drop Presses**
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Moesberg & Granville Mfg. Co., Providence,
R. I.
Vulcan Iron Works, Chicago, Ill.
- Dumb Walters**
Energy Elevator Co., Philadelphia, Pa.
Spedel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.
Variety Machine Co., Warsaw, N. Y.
- Dump Cars**
Atlas Bolt & Screw Co., Cleveland, O.
- Dynamoes**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Wearinghouse Elec. & Mfg. Co., Pitts-
burgh, Pa.
- Eave Troughs**
Kanneberg Rfg. Co., Canton, O.
- Eave Trough Hangers**
Berger Bros. Co., Philadelphia, Pa.
Oatman Bros., Medina, O.
- Edge Tools**
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Phila., Pa.
White, L. & I. J. Co., Buffalo, N. Y.
- Egg Beaters**
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass.
- Egg Opener**
Hartigan, W. R., Collinsville, Ct.
- Electric Bells and Supplies**
Ostrander, W. R. & Co., 204 Fulton St.
- Electric Lighting and Power Ap-
paratus**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
- Electrical Apparatus**
Wearinghouse Elec. & Mfg. Co., Pitts-
burgh, Pa.
- Elevators, Makers of**
Eastern Machinery Co., New Haven, Ct.
Energy Elevator Co., Philadelphia, Pa.
Lindberg Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son Co., Coatesville,
Pa.
Spedel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
- Elevator Buckets**
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleve-
land, O.
- Elevator Enclosures and Cabs**
Ludlow Saylor Wire Co., St. Louis, Mo.
- Emery**
Tanite Co., Stroudsburg, Pa.
- Emery Wheels**
American Emery Wheel Works, Provi-
dence, R. I.
Best, L., 45 Vesey St., N. Y.
Bridgeport Safety Emery Wheel Co.,
Bridgeport, Conn.
Buffalo Emery Wheel Co., Buffalo, N. Y.
Nazel, John, Phila., Pa.
Northampton Emery Wheel Co., Leeds,
Mass.
Norton Emery Wheel Co., Worcester,
Mass.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
- Vitrified Emery Wheel Co., Westfield,**
Mass.
- Emery Wheel Dresser**
Chicago Screw Co., Chicago, Ill.
Dickinson, Thos. L., 45 Vesey St., N. Y.
- Enameled Ware**
Bellair Stamping Co., Harvey, Ill.
- Engineers and Contractors**
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburgh, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Frier-Miller Engineering Co., Pitts-
burgh, Pa.
Hevl & Patterson, Pittsburgh, Pa.
Huber, S. V. Co., Pittsburgh, Pa.
Kay, G. Ashton, 253 Broadway, N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Kennedy, Walter, Pittsburgh, Pa.
Lamond, David, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
McClure, G. W. Son & Co., Pittsburgh,
Morgan Construction Co., Worcester,
Mass.
Penna. Engineering Wks., New Castle,
Penna.
Ritter-Conley Mfg. Co., Pittsburgh, Pa.
Smythe, S. K. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.
Wellman Seaver Engineering Co., Cleve-
land, O.
- Engines**
Gas.
Mietz, Aug., 128-138 Mott St., N. Y.
Northern Engineering Works, Detroit,
Mich.
Gasoline.
Charter Gas Engine Co., Sterling, Ill.
River Engine Works, Freeport, Ill.
Weber Gas & Gasoline Engine Co., Kan-
sas City, Mo.
Watkins, F. M., Cincinnati, O.
Kerosene.
Mietz, Aug., 128-138 Mott St., N. Y.
Steam.
Allis, E. P. Co., Milwaukee, Wis.
Boston Flower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Newport New Shipbuilding & Dry Dock
Co., 1 Broadway, N. Y.
Sennett Geo. B. Co., Youngstown, O.
Southward Fdry. & Mch. Co., Philadel-
phia, Pa.
Sutervant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Torten & Hogg Iron & Steel Fdry. Co.,
Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.
- Engines, Marine**
Lake City Engineering Co., Erie, Pa.
- Engines, Second Hand**
Everton, B. M., Pittsburgh, Pa.
- Engravers**
Mugford A., Hartford, Conn.
- Expanding Mandrels**
LeCount, Wm. G., So. Norwalk, Conn.
- Expansion Bolts**
Church, Isaac, Toledo, O.
Evan, F. H., Brooklyn, N. Y.
McCabe Hanger Mfg. Co., 338-345 W. 23d
St., N. Y.
Newhall, Henry B. Co., N. Y.
Seaman D. C. & Co., Philadelphia, Pa.
Steward & Komaine Mfg. Co., Phila., Pa.
- Farmers' Tools.**
Champion Tool Co., Ltd., Conneaut
Lake, Pa.
Heller Bros. & Co., Newark, N. J.
- Faucets**
McKenna Bros. Brass Co., Ltd., Pitts-
burgh, Pa.
- Faucets, Wooden**
Boston & Lockport Block Co., Boston.
Sommer's, John, Son, Newark, N. J.
- Feed Cutters**
Silver Mfg. Co., Salem, O.
- Feed Water Heaters and Purif-
iers**
Harrisburg Pipe Bending Co., Harris-
burg, Pa.
Harrison Safety Boiler Works, Phila-
delphia, Pa.
Kelly, B. F. & Son, 91 Liberty St., N. Y.
National Pipe Bending Co., New Haven.
Patterson, F. L., 136 Liberty St., N. Y.
Taunton Locomotive Mfg. Co., Taunton,
Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Hartford, Ct.
- Fencing, Iron and Wire**
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
DeKah Fence Co., DeKah, Ill.
Dwiggins Wire Fence Co., Anderson,
Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Frost Wire Fence Co., Cleveland, O.
Gilbert & Bennett Mfg. Co., 44 Cliff St.
Hartman Mfg. Co., 39 Broadway, N. Y.
Kilmer Wire Mfg. Co., Chicago, Ill.
Kokomo Fence Mch. Co., Kokomo, Ind.
Ludlow Saylor Wire Co., St. Louis, Mo.
Ornamental Iron & Wire Co., Chatta-
nooga, Tenn.
Rossman Woven Wire Fence Co., Ross-
man, N. Y.
Stewart Iron Works, Cincinnati, Ohio.
Up-to-date Mfg. Co., Terre Haute, Ind.
- Ferre-Chromium**
Willson Aluminum Co., 99 Cedar Street,
N. Y.
- Files and Rasps**
Manufacturers of
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond
Phila.
Diston, Henry & Sons, Inc., Phila., Pa.
Heller Bros. Co., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.
- Filters**
Scaife, Wm. B. & Sons, Pittsburg, Pa.

Finished Castings

Franklin H. H. Mfg. Co., Syracuse.

Fire Brick

Borgner, Cyrus, Philadelphia, Pa.
Gardner Bros., Cumberland, Md.
Haws, W. H. Fire Brick Co., Mt. Union,
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Fire Brick Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge,

Fishing Tackle

Dame, Stoddard & Co., Boston, Mass.

Flanged Fittings

Latrobe Steel Co., Phila., Pa.

Flexible Shafting

Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper

Baeder, Adamson & Co., Phila. Pa.

Floor and Ceiling Plates

Coding Mfg. Co., Bristol, Conn.

Flue Cleaners

Jackson Flue Scraper Co., Jackson.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers

Bigelow, J. F., Worcester, Mass.
Montgomery, R. R. & Co., Decatur, Ill.

Foot Power Emery Wheels

Buffalo Emery Wheel Co., Buffalo, N. Y.

Foot Rests

Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.

Bradley Co., Syracuse N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel

Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.
Titusville Forge Co., Titusville, Pa.
U. S. Projectile Co., Brooklyn, N. Y.

Forks, Hay and Manure

Continental Tool Co., Frankfort, N. Y.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson,

Foundry Facings

Obernayer, S. Co., Cincinnati, O.

Foundry Lamps

Forest City Fdy. & Mfg. Co., Cleveland.

Foundry Supplies

Gilmour, J., Bennett Building, N. Y.
Obernayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Paxson, J. W. Co., Phila., Pa.

Friction Clutches

Eastern Machinery Co., New Haven, Ct.

Furnaces, Oil, Gas and Coal

Rockwell Engineering Co., 26 Cortlandt St., N. Y.

Fuses

Ensign Bickford & Co., Simsbury, Ct.

Gages

Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware

Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing

Blackman & King, 801 Greenwich St., N. Y.

Galvanizing Process

U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Rakes

Cronk Hanger Co., Elmira, N. Y.

Garden Tools

Withington & Cooley Mfg. Co., Jackson,

Gas Compositometer

Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Gas Compressors

Norwalk Iron Works Co., So. Norwalk,

Gas Furnaces

Am. Gas Furnace Co., 21 John St., N. Y.

Gaskets

Candfield, H. O., Bridgeport, Conn.

Gaskets, Iron

Smooth On Mfg. Co., Jersey City, N. J.

Gas Producers

Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bro., Pittsburgh, Pa.

Gauges, Rolling Mill

Haines Gauge Co., Philadelphia, Pa.

Gears

Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Pittsburgh, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gears, Rawhide

Horsburgh & Scott, Cleveland, Ohio.

Gear Cutters

Becker Brainerd Milling Machine Co.,
Hyde Park, Mass.
Gould & Eberhardt, Newark, N. J.
Whitson, D. E. Mch. Co., New London,

Generators, Electric

W. Atchafalouse Elec. & Mfg. Co., Pittsburgh, Pa.

Gimlets

Norton Mfg. Co., Chester, Conn.

Glass Cutters

Barrett, W. L., Bristol, Conn.
Bultman, F. H. & Co., Cleveland, O.
Monce, S. G., Unionville, Conn.
Smith & Hemenway Co., 296 Broadway,
N. Y.

Glass Cutting Boards

Lufkin Rule Co., Saginaw, Mich.

Glue

Baeder, Adamson & Co., Phila., Pa.

Golf Goods

Bridgeport Gun Implement Co., 812 Broadway, N. Y.

Grates, Rocking

Sennett, Geo. B. Co., Youngstown, O.

Grease, Axle

Snow Flake Axle Grease Co., Boston.

Grinding and Polishing Mchs.

American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford, Ill.
Bealy, Chas. H. & Co., Chicago, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Cincinnati Milling Mach. Co., Cincinnati, O.
Gorton, Geo. Mach. Co., Racine, Wis.
Landis Tool Co., Waynesboro, Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.
Universal Mach. Co., Providence, R. I.

Grindstones

Cleveland Stone Co., Cleveland, O.

Grabbing Machine

New Century Mfg. Co., 43 E. 8th St., N. Y.

Guns

Harrington & Richardson Arms Co.,
Worcester, Mass.
Johnson, Iver Arms & Cycle Works,
Fitchburg, Mass.
Marlin Fire Arms Co., New Haven, Ct.
Remington Arms Co., 315 Broadway,
New York

Gymnasium Apparatus

Narragansett Mch. Co., Providence, R. I.

Hack Saws

Diston, Henry & Sons, Inc., Phila., Pa.
Goodell-Pratt Co., Greenfield, Mass.
Springfield Machine Screw Co., Springfield, Mass.
Starrett, L. S. Co., Athol, Mass.

Hammers

Heller Bros. Co., Newark, N. J.
Logan & Strobridge Iron Co., New
Brighton, Pa.

Hammers, Steam

Pittsburg Shear Knife & Mach. Co.,
Pittsburgh, Pa.

Hammerheads

Palmer, I. E., Middletown, Conn.
Bicknell Hdw. Co., Janesville, Wis.

Hand Milling Machines

Costello, J. E. Machine Wks., Brooklyn.

Hand Screws

Bliss, R. Mfg. Co., Pawtucket, R. I.

Handle Machinery

Defiance Machine Works, Defiance, O.

Haulies

Piqua Handle & Mfg. Co., Piqua, O.

Hangers, Barn Door

Myers, F. E. & Bro., Ashland, O.

Hangers, Door

Coburn Trolley Track Mfg. Co., Hol-
yoke, Mass.
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield, Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d
Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Ney Mfg. Co., Canton, Ohio.
Stowell Mfg. & Foundry Co., So. Mil-
waukee, Wis.
Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting

Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Milwaukee, Ind.

Hardware Comm'n Merchants

Graham, Jno. H. & Co., 113 Chambers
St., N. Y.
Hungerford, U. T., Brass & Copper Co.,
121 Worth St., N. Y.

Hardware Manufacturers

Arcade Mfg. Co., Freeport, Ill.
Central Hardware Co., Phila.
Logan & Strobridge Iron Co., New
Brighton, Pa.
Millers Falls Co., 23 Warren St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Nicol & Co., Chicago, Ill.
Parker, Chas., Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 21 Murray St.,
N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Union Mfg. Co., 103 Chambers St., N. Y.
Van Wagoner & Williams Hdw. Co.,
Cleveland, O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents

Graham, John H. & Co., 113 Chambers
St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray
St., N. Y.

Hardware Shelving

Warren, J. D. Mfg. Co., Chicago, Ill.

Hardware Specialties

Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co., of Pa., Phila., Pa.
Graham, John H. & Co., 113 Chambers
St., N. Y.
Pleuger & Henger Mfg. Co., St. Louis,
Scranton & Co., The, New Haven, Ct.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Smith & Hemenway Co., 296 Broadway,
N. Y.

Harness Snaps

Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.

Hooks and Staples

McKinney Mfg. Co., Allegheny, Pa.

Hatchets

Jen. Ins. Iron & Tool Co., Howard, Pa.

Hay Knives

Clark & Parsons Co., E. Wilton, Me.
Indiana Edge Tool Co., Gas City, Ind.
Ney Mfg. Co., Canton, Ohio.

Hay Tools

Louden Machinery Co., Fairfield, Iowa.
Nyers, F. E. & Bro., Ashland, O.
Ney Mfg. Co., Canton, O.

Heating and Ventilating Apparatus

American Blower Co., Detroit, Mich.
Bavley, Wm. & Sons Co., Milwaukee, Wis.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Perrins, R. F. & Son, Holyoke, Mass.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates

Star Heel Plate Co., Newark, N. J.

Hinges

Jenkins Iron & Tool Co., Howard, Pa.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 113 Chambers St., N. Y.

Hitching Posts

Hartman Mfg. Co., 309 Broadway, N. Y.

Hoes, Garden, Planters', &c.

Continental Tool Co., Frankfort, N. Y.
Iowa Farming Tool Co., Fort Madison.
Jenkins Iron & Tool Co., Howard, Pa.

Hoists, Air

Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son Co., Coatesville,

Hoists, Chain and Rope

Box, Alfred & Co., Philadelphia, Pa.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Works, Detroit,
Mich.
Harrington, E. Son & Co., Phila., Pa.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Works, Reading,
Pa.
Spindel, J. G., Reading, Pa.

Hoisting Machines

Eastern Machinery Co., New Haven, Ct.
Lidwood Mfg. Co., 96 Liberty St.,
N. Y.

Hollow Mill

Geometric Drill Co., Westville, Conn.

Hollow Ware

Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleve-
land, O.
New York Stamping Co., Brooklyn, N. Y.
Rogers, Jno. M. Boat-Gauge & Drill
Works, Gloucester, City, N. J.

Horse Nails

Capwell Horse Nail Co., Hartford, Ct.
McNey, W. M. & Co., Ausable Chas.,
N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston.
Wiebusch & Hilger, Ltd., 9-15 Murray
St., N. Y.

Horse and Mule Shoes

American Steel & Wire Co., Chicago, Ill.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie,
Rhode Island Perkins Horse Shoe Co.,
Providence, R. I.

Horsehoe Stands

Leonhart & Co., Berlin, Schoneberg,
Germany.

Hose

Boston Belting Co., Boston, Mass.
Peerless Rubber Mfg. Co., 16 Warren
Street, New York.

Hose Couplings

Clark, W. J. & Co., Salem, Ohio.

Hose Coupling, Air

Pedrick & Ayer Co., Philadelphia, Pa.

Hose Washers

Candfield, H. O., Bridgeport, Conn.

House Furnishing Specialties

Lloyd Mfg. Co., Minneapolis, Minn.
Williams, A. C. Ravenna, O.

Hydraulic Jacks

Dudgeon, Richard, 24 Columbia St., N. Y.
Fenderer, A. L. Sons, Wilmington, Ct.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery

Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Presses

Cornell, J. B. & J. M., 26th St. and 11th
Ave., N. Y.

Hydraulic Tools

Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers

North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua,
N. H.

Ice Making Machinery

York Mfg. Co., York, Pa.

Ice Picks

Erie Specialty Co., Erie, Pa.

Ice Shredders

Enterprise Mfg. Co., Philadelphia, Pa.
Erie Specialty Co., Erie, Pa.

Ice Tools

Gerlach, Peter & Co., Cleveland, O.
Williams, A. C., Ravenna, O.
Wood, Wm. T. & Co., Arlington, Mass.

Injectors

Jenkins Bros., New York.

Insurance, Boiler

Hartford Steam Boiler Inspection and
Insurance Co., Hartford, Conn.

Iron and Steel, Swedish

Harvey, Arthur C. Co., Boston, Mass.
Lidwood, N. 139 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers

Cibren & Co., Phila., Pa.
Cotton, Barclay W. & Co., Phila., Pa.
Cox, Justice, Jr. & Co., Ltd., Phila., Pa.

Etting, Edw. J., Philadelphia.

Keeley, Jerome & Co., Philadelphia.
Law, Ernest & Co., Phila., Pa.
Levy, Henry & Co., Philadelphia.
Lea, J. Tatnell & Co., Philadelphia.
Mohr, J. J., 430 Walnut St., Philadelphia.
Wister, L. & R. & Co., Phila., Pa.

Iron Manufacturers

Newkirk, J. B. & Co., Philadelphia, Pa.
Republic Iron & Steel Co., Chicago, Ill.
Merchants.

Bole, Ross & Co., Pittsburgh, Pa.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Law, Ernest & Co., Phila., Pa.
McInnes, C. E. & Co., Phila., Pa.
Ogden & Wallace, 577-583 Greenwich
St., N. Y.

Pierston & Co., 29 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wheeler, Mifflin & Co., Phila., Pa.
Wilson, E. H. & Co., Philadelphia.

Importers

Wheelock-Lovejoy & Co., New York and
Boston.

Iron Galvanized Sheet—See Sheets, Galvanized.**Iron Sheet—See Sheets, Iron and Steel.****Iron Ore**

Nicoll, B. & Co., 59-61 Wall St., N. Y.
Pilling & Crane, Phila., Pa.
Pullman, J. Wesley, Phila., Pa.

Ironwork, Ornamental

Adam, W. J., Joliet, Ill.
Barnum, E. T., Detroit, Mich.
Ornamental Iron & Wire Co., Chatta-
nooga, Tenn.
Van Dorn Iron Wks. Co., Cleveland, O.

Job Lots, Hardware

Chicago House Wrecking Co., Chicago, Ill.

Joint Hanger

National Iron & Wire Co., Cleveland, O.
Van Dorn Iron Wks. Co., Cleveland, O.

Keys, Machine

Morton Mfg. Co., Muskegon Heights, Mich.

Keys, Split and Riveted

Rollinger Fence Co., Greenville, O.

Logging Tools

Gerlach, Peter & Co., Cleveland, O.

LubricantsDixon, Jos., Crucible Co., Jersey City, N. J.
Snow Flake Axle Grease Co., Boston.**Lumbering Tools**

Morley Bros., Saginaw, Mich.

Lunch Boxes

Seavey Mfg. Co., Boston, Mass.

MachineryAcme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Wks. Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Bausch Mch. Tool Co., Springfield, Mass.
Becker-Brinard Milling Mach. Co., Hyde Park, Mass.Bliss E. W. Co., Brooklyn, N. Y.
Bowler, Geo. H., Cleveland, O.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence, R. I.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin Machinery & Supply Co., Allegheny, Pa.Carlin's Sons Thos., Allegheny, Pa.
Cincinnati Milling Mach. Co., Cin. O.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York City.
Davis, W. P. Machine Co., Rochester, N. Y.Dawson, A. L. & Co., Chicago, Ill.
Detrick & Harvey Mch. Co., Baltimore, Md.
Diamond Drill & Mch. Co., Birdsboro, Pa.Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass.
Du Bois Iron Works, Du Bois, Pa.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Ferracute Machine Co., Bridgeport, N. J.Fish, H. C. Machine Works, Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.Geometric Drill Co., Westville, Conn.
Gray, Robt. J., 33 54 E. 132d St., N. Y.
Hannan & Finton, Springfield, Mass.
Harris Machy Co., Minneapolis, Minn.
Hendey Machine Co., Torrington, Conn.Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis, Mo.Kaiser, A. V. & Co., Phila., Pa.
Lodge & Shipley Mch. Tool Co., Cin., U. Land, S. T., Boston, Mass.
McCabe, J. J., 14 Day Street, N. Y.McDowell & Co., Pittsburgh, Pa.
McDowell Stocker & Co., Chicago.
Machinists' Supply Co., Rochester, N. Y.
Manning, Maxwell & Moore, 33-59 Liberty St., N. Y.Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Hushart Mchry. Co., Chicago, Ill.
Mossberg, Frank Co., Attleboro, Mass.National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.Niles Tool Works Co., 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Ct.
Paradox Machinery Co., Chicago, Ill.Pennsylvania Machine Co., Phila., Pa.
Phila. Machine Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Pond Machine Tool Co., Plainfield, N. J.Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Poulter & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.Prentiss Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Rainier & Williams, Chicago, Ill.Reade, Wm. A. & Co., Cleveland, O.
Seyfert's Sons L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Thomas & Lowe Machinery Co., Providence, R. I.Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill Robert & Co., Chester, Pa.Windsor Machine Co., Windsor, Vt.
Wisconsin Machinery Co., Milwaukee, Wis.
Wormer, C. C. Mch. Co., Detroit, Mich.

York, S. M. Co., Cleveland, O.

Machinery, Wood Working
American Machy Co., Grand Rapids, Mich.
Defiance Machine Wks., Defiance, O.
Fay, J. A. & Egan Co., Cincinnati, O.**Machinery Springs**
Scott, Chas. Spring Co., Phila., Pa.**Machinery Builders**
Chapman, J. B. & Co., Springfield, Mass.
U. S. Projectile Co., Brooklyn, N. Y.**Machine Screws—See Screws, Machine**
Machine Screw Work
Spencer Automatic Mch. Screw Co., Hartford, Conn.**Machine Tools—See Machinery**
Machine Work
Nuttall, R. D. & Co., Pittsburgh, Pa.**Machine Wrenches**
Billings & Spencer Co., Hartford, Conn.**Machinists' Scales**
Starrett, L. S. Co., Athol, Mass.**Machinists' Tools and Supplies**
Billings & Spencer Co., Hartford, Conn.
General Supply Co., 40 John St., N. Y.
Keystone Mfg. Co., Buffalo, N. Y.**Magnetic Separators**
Crescon, Geo. V. Co., Phila., Pa.**Manganese Bronze**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.**Manufacturing Properties**
Hillman, J. H. & Co., Pittsburgh, Pa.**Manufacturing Sites**
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
Southern Railway Co., Washington, D. C.**Measuring Machines**
Rogers, Jno. M. Bos', Gauge & Drill Wks., Gloucester City, N. J.**Leaf Choppers**Brown, Jas. J., 180 Duane St., N. Y.
Enterprise Mfg. Co. of Pa., Phila., Pa.
Peck, Stow & Wilcox Co., 37 Murray St., New York.Streeter, N. R. & Co., Rochester, N. Y.
Woodruff, O. D., Pottstown, Pa.**Metal Brokers**
American Metal Co., 32 Broadway, N. Y.**Metals**
Hendricks Bros., 49 Cliff St., N. Y.
Hofeller, Theo. & Co., Buffalo, N. Y.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.Rutter, A. T., 236 Broadway, N. Y.
United Metals Selling Co., 11 Broadway, N. Y.**Metal Polish**
Hoffman, Geo. W., Indianapolis, Ind.**Metal Spinning**
Goodwin & Kintz Co., Winsted, Conn.**Metal Wheels**
Electric Wheel Co., Quincy, Ill.**Milling Machines**
Agassiz & Co., Dubuque, Iowa.
Becker-Brinard Milling Machine Co., Hyde Park, Mass.Brown & Sharpe Mfg. Co., Providence, R. I.
Carter & Hake Mch. Co., Winsted, Ct.
Cincinnati Milling Mach. Co., Cin., O.
Fox Machine Co., Grand Rapids, Mich.Garvin Machine Co., Spring and Varick Sts., N. Y.
Niles Tool Works Co., 138-133 Liberty St., N. Y.Shuster, F. B. Co., New Haven, Conn.
Thurston Mfg. Co., Providence, R. I.**Mining Knives**
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.**Mining Machinery**
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.**Mining Screens**
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Michigan Wire Cloth Co., Detroit, Mich.

Miter Boxes
Thomson Bros. & Co., Lowell, Mass.**Molding Machines**
Adams Co., Dubuque, Iowa.
Maywood Fdry. & Mch. Co., Chicago.**Motor Fans**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.**Motors, Air**
Stow Flexible Shaft Co., Phila., Pa.**Motors, Electric**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.Sturtevant, B. F. Co., Boston, Mass.
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.**Nail Clippers**
Cook, H. C. Co., Ansonia, Conn.**Nail Machinery**
Pittsburgh Mfg. Co., Pittsburgh, Pa.**Nail Pullers**
Hagen & Reid, Troy, N. Y.
Scranton & Co., The, New Haven, Conn.

Snow, L. T., New Haven, Conn.

Name Plates, Machinery
Murdoch Parlor Grate Co., Boston, Mass.**Natural Gas Pumps**
Norwalk Iron Wks. Co., So. Norwalk, Ct.**Nickel Platers' Supplies**
Eddy Electric Mfg. Co., Windsor, Conn.**Nickeloid**
American Nickeloid Co., Peru, Ill.**Norway Shapes**
Rowland, William & Harvey, Frankford, Philadelphia.**Nuts—See Bolts**
Nuts, Self-Locking
National Elastic Nut Co., Milwaukee, Wis.**Nut Machines**
Dunham Nut Co., Unionville, Conn.**Oil Burners**
Burns, J. J. Carbon Burner Co., Fort Plain, N. Y.**Oil Burning Appliances**
Rockwell Engineering Co., 36 Cortlandt St., N. Y.**Oil Extractor**
Reed & Curtis Mch. Screw Co., Worcester, Mass.**Oil Heaters—See Oil Stoves.**
Oil Stones
Pike Mfg. Co., Pike Station, N. H.**Oil Stoves—(See Stoves Oil, Vapor and Gasoline)**
Oilers
Hammer Mfg. Co., Pittsburgh, Pa.Hammer & Co., Branford, Conn.
Stoutenburg Mfg. Co., Keltsburg, Ill.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.**Oilless Bearings**
North American Metalline Co., Long Island City, N. Y.**Ore Breakers**
Aultman Co., Canton, O.

Cresson, Geo. V. Co., Phila., Pa.

Ores
Blair, Reed F. Co., Pittsburgh, Pa.Samuel, Frank, Philadelphia, Pa.
Wiater, Francis, Philadelphia, Pa.**Ovens, Portable**
Bodgett, G. S. Co., Burlington, Vt.**Ox Shoes**
Scranton Forging Co., Scranton, Pa.

Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Packing
Boston Belding Co., Boston, Mass.Morrison, Robert, St. Louis, Mo.
Peelless Rubber Mfg. Co., 16 Warren Street, N. Y.**Packing, Iron**
Smith On Mfg. Co., Jersey City, N. J.**Padlocks**
Graham, John H. & Co., 113 Chambers Street, New York.**Paints**
Dixon, Jos. Crucible Co., Jersey City.**Pants Stretcher**

Covert Mfg. Co., West Troy, N. Y.

Patent SolicitorsGoepel & Raegener, 290 Broadway, N. Y.
Howsen & Howson, Philadelphia and Washington.

Stocking, E. B., Washington, D. C.

Patterns
Balkwill Pattern Wks., Cleveland, O.
Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.

Mt. Vernon Pattern & Model Works, Mt. Vernon, O.

Pattern Letters
Rutler, A. G., 103 Beckman St., N. Y.

St. Louis Electrotype Foundry, St. Louis

Pattern Makers
Birnbau, C., Cleveland, O.**Perforated Metal**
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.

Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Bronze
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.**Phosphor Tin**
Crescent Phosphorized Metal Co., Philadelphia, Pa.

Halk & Naumann, 519 Pearl St., N. Y.

Syracuse Smelting & Wks., Syracuse, N. Y.

Picture Wire
Oswann Mills Co., Norwich, Conn.**Pig Casting Machines**
Heyl & Patterson, Pittsburgh, Pa.**Pig Iron**
Alabama Consolidated Coal & Iron Co., Birmingham, Ala.Ashland Steel Co., Ashland, Ky.
Baird, C. R. & Co., Phila., Pa.Cherry Valley Iron Co., Pittsburgh, Pa.
Dimmick, J. K. & Co., Phila., Pa.Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.Nicol, B. & Co., 324 Wall St., N. Y.
Samuel, Frank, Philadelphia, Pa.Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
Snyder, W. P. & Co., Pittsburgh, Pa.Superior Charcoal Iron Co., Grand Rapids, Mich.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.

Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

Pig Iron Analysis
Church, S. H., San Francisco, Cal.**Pig Iron Storage**
Am. Pig Iron Storage Warrant Co., 4 Wall St., N. Y.**Pile Drivers**
Vulcan Iron Works, Chicago, Ill.**Piners**
Washington Tool Co., Owatonna, Wis.**Pipe, Bent**
Harrisburg Pipe Bending Co., Harrisburg, Pa.**National Pipe Bending Co., New Haven, Conn.**
National Tube Co., Pittsburgh, Pa.

Whitlock Coil Pipe Co., Hartford, Ct.

Pipe Coupling
Williams, J. H. & Co., Brooklyn, N. Y.**Pipe Cutting and Threading Machines**
Signal & Keeler Mfg. Co., Edwardsville, Ill.

Curtis & Curtis, Bridgeport, Conn.

Jarecki Mfg. Co., Erie, Pa.

Merrill Mfg. Co., Toledo, O.

Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips
Prentiss Vise Co., 44 Barclay, N. Y.**Pipes, Fittings, &c.**
Jarecki Mfg. Co., Erie, Pa.

McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel
Pollock, W. B. Co., Youngstown, O.

Scaife, Wm. B. & Sons, Pittsburgh.

Warren City Boiler Works, Warren, O.

Pipe, Water and Gas
Mittler, C. & Son Co., Utica, N. Y.

National Tube Co., Pittsburgh, Pa.

Red Jacket Mfg. Co., Davenport, Iowa.

U. S. Cast Iron Pipe & Foundry Co., Wood, Ill. & Co., Philadelphia, Pa.

Piston Rods, Tobin Bronze
Ansonia Brass & Copper Co., 99 John St., N. Y.**Planes**
Stanley Rule & Level Co., N. Y.**Planers**
Amer. Tool Works Co., Cincinnati, O.

Baird, U. Machinery Co., Pittsburgh, Pa.

Detrick & Harvey Mch. Co., Baltimore.

Draper Mch. Tool Co., Worcester, Mass.

Pond Machine Tool Co., Plainfield, N. J.

Whitcomb Mfg. Co., Worcester, Mass.

Wilson, W. A., Rochester, N. Y.

Plated Ware
International Silver Co., Meriden, Ct.**Plates, Iron and Steel**
Jones & Laughlins, Ltd., Pittsburgh, Pa.

Lukens Iron & Steel Co., Coatesville, Pa.

Singer, Nimick & Co., Inc., Pittsburgh, Pa.

Wood, Alan Co., Philadelphia.

Plate Iron Work
Scaife, Wm. B. & Sons, Pittsburgh.**Pliers**
Bridgeport Mfg. Co., Bridgeport, Conn.

Cronk Hanger Co., Elmira, N. Y.

Utica Drop Forge & Tool Co., Utica, N. Y.

Pneumatic Tools

Phila. Pneumatic Tool Co., Phila., Pa.

Pocket Knives

Cassaragus Cutlery Co., Little Valley, N. Y.

Polishing Wheels

Divine Bros. Co., Utica, N. Y.

Portable Track

Atlas Bolt & Screw Co., Cleveland, O.

Poultry Fencing

DeKalb Fence Co., DeKalb, Ill.

Poultry Nettings

Gilbert & Bennett Mfg. Co., 44 Cliff St., N. Y.

N. J. Wire Cloth Co., Trenton, N. J.

Tyler, W. S. Co., Cleveland, O.

Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws

Hoefler Mfg. Co., Freeport, Ill.

Power Hammers

Beaudry & Co., Boston, Mass.

Bradley Co., Syracuse, N. Y.

Dionell & Eisenhardt, Philadelphia.

Dupont Mfg. Co., St. Johnsbury, Vt.

Hilbert-Freiberg Mch. Tool Co., Cincinnati, O.

Kiddler, R. E., Worcester, Mass.

Long & Allstatler Co., Hamilton, Ohio.

Miner & Peck Mfg. Co., New Haven, Ct.

Scranton & Co., The, New Haven, Conn.

Power Transmitting Mach'y

Cresson, Geo. V. Co., Phila., Pa.

Dodge Mfg. Co., Mishawaka, Ind.

Norwalk Iron Wks. Co., So. Norwalk, Ct.

Pressed Metal Work

Avery Stamping Co., Cleveland, Ohio.

Presses, Power

Adrianne Mach. Works, Brooklyn, N. Y.

Bliss, E. W. Co., Brooklyn, N. Y.

Cross & Speirs Mch. Co., Waterbury, Ct.

Ferracute Mach. Co., Bridgeport, N. J.

Hibbard, W. H., Brooklyn, N. Y.

Hilles & Jones Co., Wilmington, Del.

Lester, Chas. & Co., Brooklyn, N. Y.

Manville, E. J. Mch. Co., Waterbury, Ct.

Merriman, A. H., Meriden, Conn.

Mossberg & Granville Mfg. Co., Providence, R. I.

Niagara Machine & Tool Wks., Buffalo.

Perkins Machine Co., Boston, Mass.

Phila. Machine Tool Co., Phila., Pa.

Rudolph & Krummel, Chicago, Ill.

Shuster, F. B. Co., New Haven, Conn.

Projectiles
National Tube Co., Pittsburgh, Pa.**Pulleys**

Amer. Pulley Co., Phila., Pa.

Dodge Mfg. Co., Mishawaka, Ind.

Eastern Machinery Co., New Haven, Ct.

Evans, G. F., Boston, Mass.

Hess Snyder & Co., Massillon, O.

Jones & Laughlins Ltd., Pittsburgh, Pa.

Saginaw Mfg. Co., Saginaw, Mich.

Woods, T. B. Sons, Chambersburg, Pa.

Pumping Machinery
Cook, A. D., Lawrenceburg, Ind.

Filer & Stowell Co., Milwaukee, Wis.

Ingersoll-Sergeant Drill Co., 36 Cortlandt St., N. Y.

Lake City Engineering Co., Erie, Pa.

McGowan, J. H. & Co., Cincinnati, O.

Southworth Fdry. & Mch. Co., Philadelphia, Pa.

Pumps
Athol Pump Co., Athol, Mass.

Barnes Mfg. Co., Mansfield, O.

Deming Co., Salem, O.

Edson Mfg. Co., Boston, Mass.

- Razor Hones**
Pike Mfg. Co., Pike Station, N. H.
- Reamers**
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Recording Gauges**
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.
- Reels**
Hendryx, A. B. Co., New Haven, Conn.
- Refrigerating Machinery**
York Mfg. Co., York, Pa.
- Refrigerators**
Maine Mfg. Co., Nashua, N. H.
- Registers**
Seavey Mfg. Co., Boston, Mass.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
- Relaying Rails**
Donaldson & Newton, Phila., Pa.
Isaac Joseph Iron Co., Cincinnati, O.
May & Spalding, 32 Broadway, N. Y.
Steel Rail Supply Co., 100 B'way, N. Y.
- Reloading Tools**
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.
- Repairing Sets, Family**
Jitchell, W. B., Chicago, Ill.
Schrayers, M. Sons & Co., Chicago, Ill.
Star Steel Plate Co., Newark, N. J.
- Repair Outfits, Farmers'**
Imperial Bit & Snap Co., Racine, Wis.
- Revolution Counters**
Fitzkin, A. B. Machinery Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.
- Revolvers**
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
- Rifles**
Marlin Fire Arms Co., New Haven, Ct.
Remington Arms Co., 313 B'way, N. Y.
Stevens Arms & Tool Co., Chicopee Falls, Mass.
- Ring Rollers**
Shuster, F. B. Co., New Haven, Conn.
- Riveters**
Phila. Pneumatic Tool Co., Phila., Pa.
- Rivets**
American Iron & Steel Mfg. Co., Lebanon, Pa.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
McIntire, C. E. & Co., Phila., Pa.
Plymouth Mills, Plymouth, Mass.
Rockford Bolt Works, Rockford, Ill.
Townsend C. C. & E. P., New Brighton, Pa.
- Riveting Machines**
Bethlehem Foundry & Mch. Co., So. Bethlehem, Pa.
Shuster, F. B. Co., New Haven, Conn.
- Roadsters and Bunkers**
Shepard, Sidney & Co., Buffalo, N. Y.
- Roll Mill Machinery**
Bradley Machine & Mfg. Co., Brad-dock, Pa.
Morgan Construction Co., Worcester, Mass.
- Roll Turning Tools**
Trethewey, Sam'l & Co., Ltd., Pittsburgh
- Roller Bearings**
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
- Rolling Mill Machinery**
Booth, The Lloyd Co., Youngstown, O.
A. J. Vernon, B. M., Pittsburgh, Pa.
Farrell Fdry. & Mch. Co., Ansonia, Ct.
Frank-Kneeland Mach. Co., Pittsburgh
Garrison, A. Foundry Co., Pittsburgh
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Penna. Engineering Wks., New Castle, Penna.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
- Rolls, Chilled, Sand and Steel**
Booth, The Lloyd Co., Youngstown, O.
Farrell Fdry. & Mch. Co., Ansonia, Ct.
Frank-Kneeland Mach. Co., Pittsburgh
Garrison, A. Foundry Co., Pittsburgh
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Penna. Engineering Wks., New Castle, Penna.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
- Roofing and Siding**
Asphalt Ready Roofing Co., 136 Water St., N. Y.
Garry Iron & Steel Roofing Co., Cleveland, O.
Kannenberg Roofing Co., Canton, O.
Scaife, Wm. B. & Sons, Pittsburgh
Youngstown Iron & Steel Roofing Co., Youngstown, O.
- Rope and Cordage**
American Mfg. Co., 65 Wall St., N. Y.
Waterbury Rope Co., 69 South St., N. Y.
- Rope and Web Goods**
Covert Mfg. Co., West Troy, N. Y.
- Rope Shield**
Ironclads Co., Columbus, Ohio.
- Rope Transmission and Hoisting**
American Mfg. Co., 65 Wall St., N. Y.
California Wire Works, San Francisco
Hunt, C. W. Co., West New Brighton, N. Y.
Leschen, A. & Sons, Rope Co., St. Louis
Wood & T. B. Sons, Chambersburg, Pa.
- Rubber Goods**
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.
Footless Rubber Mfg. Co., 16 Warren Street, N. Y.
- Rubber Scrap**
Hofeller, Theo. & Co., Buffalo, N. Y.
- Rules**
Larkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co., 29 Chambers St., N. Y.
- Sad Irons**
Enterprise Mfg. Co., Phila., Pa.
Williams, A. C., Ravenna, O.
- Sand Blast Apparatus**
Ward, Edgar T. & Sons, Boston, Mass.
- Sand Paper**
Baeder, Adamson & Co., Phila., Pa.
- Sash Balances**
Caldwell Mfg. Co., Rochester, N. Y.
Pulman Sash Balance Co., Rochester, N. Y.
Streeter, N. R. & Co., Rochester, N. Y.
- Sash Cords and Chains**
Bridgeport Chain Co., Bridgeport, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.
- Sash Locks**
Fitch, W. & E. T. Co., The, New Haven, Conn.
Ives, H. B. & Co., New Haven, Conn.
- Sash Pullers**
Fox Machine Co., Grand Rapids, Mich.
Grand Rapids Hardware Co., Grand Rapids, Mich.
Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights**
Barney & Reed Mfg. Co., Boston, Mass.
Brown, E. E. & Co., Philadelphia, Pa.
- Sausage Stuffers**
National Specialty Mfg. Co., Phila., Pa.
- Saws**
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Inc., Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.
- Saw Clamps**
Disston, Henry & Sons, Inc., Phila., Pa.
- Saw Guides**
Thomson Bros. & Co., Lowell, Mass.
- Saw Handles**
Ladd, W. C., Bristol, Conn.
- Saw Sets**
Disston, Henry & Sons, Inc., Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.
- Saw Tools**
Atkins, E. C. & Co., Indianapolis, Ind.
- Scales**
American Cutlery Co., Chicago, Ill.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Chicago Seal Co., Chicago, Ill.
Pelouse Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.
- Scrap Metals**
Armstrong, K. S. & Bro., Atlanta, Ga.
Blake, M. J. & M., 11th Ave. and 15th St., N. Y.
Bolter, C., Hoboken, N. J.
Greiner, F., Philadelphia, Pa.
Hitner, H. A. & Sons, Phila., Pa.
Hofeller, Theo. & Co., Buffalo, N. Y.
Leonard, John & Co., 22 Broadway, N. Y.
Miles, E. O. & Co., Atlas, N. Y.
N. J. Iron & Metal Co., Paterson, N. J.
Phillips, F. R. & Sons Co., Phila., Pa.
Rogers, W. H., Bridgeport, Conn.
Samuels, M. Sons, Brooklyn, N. Y.
Smith, Morton B. Co., New York.
- Scrap Metal Breakers**
Birdsboro Iron & Steel Breaking Co., Birdsboro, Pa.
- Scrapers, Road**
American Steel Scraper Co., Sidney, O.
Aultman Co., Canton, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
Syracuse Chilled Plow Co., Syracuse.
- Screens, Perforated Metal**
Harrington & King Perforating Co., Chicago, Ill.
- Screens, Window and Door**
Darcy, Edw. & Sons, Philadelphia, Pa.
- Screw Cutting Dies**
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometrie Drill Co., Westville, Conn.
Rogers, Jno. M. Boat Gauge & Drill Wks., Gloucester City, N. J.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros., Wrentham, Mass.
- Screw Drivers**
Braunsdorf-Mueller Co., Elizabeth, N. J.
Brown, R. H. & Co., New Haven, Conn.
Goodell-Pratt Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Mass.
- Screw Machine Products**
Dodge Machine Screw Co., Boston, Mass.
- Screw Machinery**
American Tool Wks. Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence
Costello, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Springfield and Various Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.
Windsor Mch. Co., Windsor, Vt.
- Screws**
Hall & Sam'l Sons, 229 West 10th St., N. Y.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
- Screws, Machine**
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Haskell, Wm. H. Mfg. Co., Pawtucket
Hubbell, Harvey, Bridgeport, Conn.
Illinois Screw Co., Chicago, Ill.
Miles, F. S., 315 & 317, Philadelphia, N. Y.
New Britain Hdw. Mfg. Co., New Britain, Conn.
Niagara Screw Co., Buffalo, N. Y.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Reel & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester, Mass.
- Screws, Wood**
American Screw Co., Providence, R. I.
Franklin Moore Co., Winsted, Conn.
Reading Hardware Co., Reading, Pa.
Reading Screw Co., Norristown, Pa.
- Scroll Saws**
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 28 Warren St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stones and Whetstones**
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.
- Seamless Steel Tubes**
Ivins Ellwood, 487 Broadway, N. Y.
Janney, Steinmetz & Co., Phila., Pa.
National Tube Co., Pittsburgh, Pa.
- Security Snaps**
Sundries Mfg. Co., South Bend, Ind.
- Sewing Machines**
Demorest Mfg. Co., Williamsport, Pa.
National Sewing Machine Co., Belvidere, Ill.
- Shafting**
Cresson, Geo. V. Co., Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Parsons, Wm. & Co., Perth Amboy, N. J.
Pittsburgh Steel Shafting Co., Rankin, Pa.
Stow Mfg. Co., Binghamton, N. Y.
Wood, T. B. Sons, Chambersburg, Pa.
- Shaped Iron and Steel**
Allentown Rolling Mill, Allentown, Pa.
American Steel Hoop Co., Battery Park Building, N. Y.
American Steel & Wire Co., Chicago, Ill.
Forest City Steel & Iron Co., Cleveland, Ind.
Lindsay, W. W. & Co., Phila., Pa.
Lockhart Iron & Steel Co., Pittsburgh
National Steel Co., Bridgeport, O.
Passaic Rolling Mill Co., Paterson, N. J.
Phoenix Iron Co., Phila., Pa.
Pittsburgh Steel Shafting Co., Rankin, Pa.
Republic Iron & Steel Co., Chicago, Ill.
- Shapers**
Barker-Chard Mach. Tool Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Perkins Machine Co., Boston, Mass.
Potter & Johnston Co., Pawtucket, R. I.
- Shear Knives**
Trethewey, Sam'l & Co., Ltd., Pittsburgh
- Shears and Scissors**
Acme Shear Co., Bridgeport, Conn.
Bridgeport Mfg. Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, Pa.
Heinrich, R. Sons Co., Newark, N. J.
Lan Cutlery Works, Cedar Rapids, Ia.
National Cutlery Co., Phila., Pa.
Webbush & Hilder, Ltd., 9-15 Murray St., N. Y.
- Shears, Metal**
Carlin's, Thomas Sons Co., Allegheny, Pa.
Pittsburgh Shear, Knife & Mach. Co., Pittsburgh, Pa.
- Sheet Bars**
National Steel Co., Battery Park Building, N. Y.
- Sheet and Bolt Copper**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Sheet and Rolled Brass**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Sheet Metal Machinery**
Adriance Mach. Works, Brooklyn, N. Y.
- Sheets, Galvanized**
American Sheet Steel Co., New York.
McCullough Iron Co., Wilmington, Del.
- Sheets, Iron and Steel**
American Sheet Steel Co., New York.
McCullough Iron Co., Wilmington, Del.
National Steel Co., Bridgeport, O.
Republic Iron & Steel Co., Chicago, Ill.
Singer, Niblick & Co., Inc., Pittsburgh.
Water, L. & R. Co., Philadelphia, Pa.
Alan Wood Co., Philadelphia.
- Sheet Zinc**
Illinois Zinc Co., Peru, Ill.
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Boxes**
Heller Box Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.
- Shelf Ladders**
Bicycle Step Ladder Co., Chicago, Ill.
National Trolley Track Mfg. Co., Holyoke, Mass.
Milbratt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.
- Shelving**
Warr, N. J. D. Mfg. Co., Chicago, Ill.
- Shipbuilders**
Newport News Shipbuilding & Dry Dock Co., 1 Broadway, N. Y.
- Shovels, Spades and Scoops**
Continental Tool Co., Frankfort, N. Y.
St. Louis Shovel Co., St. Louis, Mo.
- Sinks**
Kilbourne & Jacobs Mfg. Co., Columbus, O.
- Skates, Ice**
Dime, Stoddard & Co., Boston, Mass.
Union Hardware Co., Torrington, Conn.
- Skate Sharpeners**
Amson Mfg. Co., Cleveland, O.
- Skylights**
Drouve, G. O., Bridgeport, Conn.
- Smelting Works**
Reeves, Paul S., 760 S. Broad, Phila.
- Soapstone Goods**
Pike Mfg. Co., Pike Station, N. H.
- Soapstone Pencils**
Steward, D. M. Mfg. Co., Chattanooga, Tenn.
- Soldering Copper Handles**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Soldering Coppers**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Speaking Tubes**
Ostrander, W. H. & Co., 301 Fulton St., N. Y.
- Specialty Manufacturers**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
Smith & Egge Mfg. Co., Bridgeport, Ct.
- Spelter**
Illinois Zinc Co., Peru, Ill.
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Spelter Solder**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Spikes**
American Iron & Steel Mfg. Co., Lebanon, Pa.
- Spoons and Forks**
International Silver Co., Meriden, Ct.
- Sporting Goods**
Dime, Stoddard & Co., Boston, Mass.
- Spray Pumps—(See Pumps)**
- Springs**
American Steel & Wire Co., Chicago, Ill.
Barnes, Wallace Co., Bristol, Conn.
Cary Spring Works, 240 W. 25th St., N. Y.
Chaffin, John & Sons, 85-89 Cliff St., New York.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O.
Dunbar Bros., Bristol, Conn.
Gibson, W. D. Co., Chicago.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.
- Springs, Wagon, Etc.**
Wurster, F. W. & Co., Brooklyn, N. Y.
- Spring Cotters**
Brooks, M. S. & Sons, Chester, Conn.
Holinger Fence Co., Greenville, O.
- Spring Hinges**
Bommer Bros., Brooklyn, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland, O.
- Sprocket Chain**
Buhl Malleable Co., Detroit, Mich.
- Spruce Cutters, Foot and Power**
Shuster, F. B. Co., New Haven, Conn.
- Stacks**
Scaife, Wm. B. & Sons, Pittsburgh.
- Stamped Ware**
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N. Y.
- Stamping, Sheet Metal**
American Hdw. Mfg. Co., Ottawa, Ill.
American Railway Supply Co., 24 Park Place, N. Y.
American Steel Scraper Co., Sidney, O.
Cleveland Stamping & Tool Co., Cleveland, Ohio.
Davis & Buxton Stamping Co., Worcester, Mass.
Goodwin & Kintz Co., Winsted, Conn.
Houghton & Buxton Mfg. Co., Worcester, Mass.
Jenkinson, R. C. & Co., Newark, N. J.
Kongislow, E. & Bro., Cleveland, Ohio.
McKenzie Bros. Brass Co., Ltd., Pittsburgh, Pa.
Mossberg, Frank Co., Attleboro, Mass.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Seamless Metal Ware Co., 277 Broadway, N. Y.
Wheeling Hinge Co., Wheeling, W. Va.
Wilson & Smith, Worcester, Mass.
- Staple Machines, Automatic**
Shuster, F. B. Co., New Haven, Conn.
- Staples and Double Pointed Tacks**
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Titchener, E. H. & Co., Binghamton, N. Y.
- Steam Hammers, &c.**
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia St., N. Y.
Sellers, Wm. & Co., Inc., Phila., Pa.
- Steam Heating**
Webster, Warren & Co., Camden, N. J.
- Steam Separators**
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.
- Steam Shovels**
The Automatic Shovel Co., Lorain, O.
- Steam Specialties**
Crosby Steam Gauge & Valve Co., Boston.
Mason Regulator Co., Boston, Mass.
- Steel Buildings**
American Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
New England Structural Co., Boston, Mass.
Ritter-Conley Mfg. Co., Pittsburgh, Pa.
Scaife, Wm. B. & Sons, Pittsburgh, Pa.
- Steel Chimneys**
Lindsay, W. W. & Co., Phila., Pa.
- Steel, Cold Rolled Strip**
Wilnot & Hobbs Mfg. Co., Bridgeport.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel Flanges, Weldless**
Latrobe Steel Co., Philadelphia, Pa.
- Steel Forgings and Castings**
Bethlehem Steel Co., So. Bethlehem, Pa.
- Steel Hoops**
American Steel Hoop Co., Battery Park Building, N. Y.
- Steel Importers**
Hobson, Houghton & Co., 98 John St., N. Y.
Jesse, Wm. & Sons, Sheffield, England, or 91 John St., N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., New York and Boston.
- Steel (Mushet's) Special**
Jones, B. M. & Co., Boston.
- Steel Manufacturers**
American Steel Hoop Co., Battery Park Building, N. Y.
American Steel & Wire Co., Chicago, Ill.
Ashland Steel Co., Ash and, Ky.
Baker, Hermann & Co., 108 Duane St., New York.
Braeburn Steel Co., Braeburn, Pa.
Canton Steel Co., Canton, Ohio.
Champion Iron & Steel Co., Muskegon, Mich.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.

ord Steel Co., Philadelphia.
A. Houghton & Co., 98 John St., New York.
Wm. & Sons, Sheffield, England, or 9 John St., New York.
Jones & Laughlin, Ltd., Pittsburgh, Pa.
Kidd Bros. & Hargner Steel Wire Co., McKees Rocks, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lorain Steel Co., Lorain, Ohio.
Lukens Iron & Steel Co., Coatesville, Pa.
Nash, Geo. & Co., Chicago.
National Steel Co., Battery Park Building, New York.
Newkirk, J. B. & Co., Philadelphia, Pa.
Ottis Steel Co., Ltd., Cleveland, Ohio.
Republic Iron & Steel Co., Chicago, Ill.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wardlaw, S. & C., Sheffield, England.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Manufacturers Agents
Ogden & Wallace, 317-333 Greenwich St., New York.
Snyder, W. P. & Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

Steel, Seif Hardening
Denman & Davis, 85-87 John St., N. Y.

Steel Rails
Lorain Steel Co., Lorain, Ohio.

Steel Stamps and Stencil Dies
Eucker, L. A. Stamp Works, Little Ferry, N. J.
Ness, Geo. M., Jr., 61 Fulton St., N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool
Braeburn Steel Co., Braeburn, Pa.
Canton Steel Co., Canton, Ohio.
Crescent Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jesse, Wm. & Sons, Sheffield, England, 91 John St., N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Nash, Geo. & Co., Chicago.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies
Card, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Hollands Mfg. Co., Erie, Pa.
Jones & Lamson Mfg. Co., Springfield, Vt.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros., Wrentham, Mass.

Stone Cutting Machinery
Gilmour, J., Bennett Bldg., N. Y.

Stone Working Machinery
Patch, F. R. Mfg. Co., Rutland, Vt.

Step Screws
Read, A. P. & Co., Chicago, Ill.

Store Fixtures
Warren, J. M. Mfg. Co., Chicago, Ill.

Stern Window Fasteners
Woodruff, W. W. & Sons, Mt. Carmel, Ct.

Stove Linings
Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles
Cheney, S. & Son, Manlius, N. Y.

Stoves, Oil, Vapor and Gasoline
Schneider & Trenkamp Co., Cleveland, Ohio.

Straitening Machines, Wire and Sheet Metal
Shuster, F. B. Co., New Haven, Conn.

Structural Iron and Steel Work
American Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Du Bois Iron Works, Du Bois, Pa.
Eastern Bridge & Structural Co., Worcester, Mass.
Forest City Steel & Iron Co., Cleveland, Ohio.
Illinois Steel Co., Chicago, Ill.
Moseley Iron Bridge & Roof Co., 20 Cortlandt St., N. Y.
New England Structural Co., Boston, Mass.
Phoenix Iron Co., Philadelphia, Pa.
Ritter-Conley Mfg. Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.
West Side Foundry Co., Troy, N. Y.

Sulphuric Acid
Matthiessen & Heiler Zinc Co., La Salle, Ill.

Swaging Machine
Excelsior Needle Co., Torrington, Ct.

Table Ware
International Silver Co., Meriden, Ct.

Tacks, Brads, &c.
Diamond Tack & Nail Works, Raynham, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Plymouth Mills, Plymouth, Mass.
Ripley & Bartlett, Plymouth, Mass.
Shelton Co., Birmingham, Conn.

Tack and Nail Machinery
Kimball Bros. & Sprague, Brockton, Mass.
Sweetzer, W. A., Brockton, Mass.

Tanks, Iron and Steel
Scaife, Wm. B. & Sons, Pittsburgh.

Tapes
Lufkin Rule Co., Saginaw, Mich.

Tap Holder
Ideal Machine Works, Hartford, Conn.

Tapping Machines
Hubbell, Harvey, Bridgeport, Conn.

Taps and Dies
Bealey, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Vt.
Card, S. W. Mfg. Co., Mansfield, Mass.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Winter Bros., Wrentham, Mass.

Telephones
Rawson Electric Co., Elvira, Ohio.

Terne Plate
American Tin Plate Co., N. Y.

Thimble Skeins
Mitchell, W. B., Chicago, Ill.

Time Recorders
Chicago Time Recorder Co., Chicago, Ill.
Nash, C. & Co., 127 Duane St., N. Y.
Simplex Time Recorder Co., Gardner, Mass.
Waggoner Watchman Clock Co., Grand Rapids, Mich.

Tin Mills
Philadelphia Roll & Mch. Co., Phila., Pa.
Phillips, F. R. & Sons Co., Phila., Pa.

Tinners' Tools and Machines
Niagara Machine & Tool Works, Buffalo.

Tin Plate
American Tin Plate Co., N. Y.
Champion Iron & Steel Co., Muskegon, Mich.
Merchant & Co., Inc., Philadelphia, Pa.

Tin Plate Machinery
Lloyd Booth Co., Youngstown, Ohio.

Tinware
Keen & Hagerly, Baltimore, Md.
Seamless Metal Ware Co., 277 Broadway, N. Y.

Tiaware Machinery
Shuster, F. B. Co., New Haven, Conn.

Tobin Bronze
Ansonia Brass & Copper Co., 99 John St., N. Y.

Toe Calks, Steel
Burke, P. F., Boston, Mass.

Tool Chests
Am. Tool Chest Co., 200 W. Houston St., New York.
Bliss, R. Mfg. Co., Fawtucket, R. I.

Tool Grinders
Sellers, Wm. & Co., Inc., Phila., Pa.
Union Mfg. Co., Buffalo, N. Y.

Tool Holders
Hill Tool Co., Anderson, Ind.
Hogson & Pettit Mfg. Co., New Haven, Conn.

Tools
Athol Machine Co., Athol, Mass.
Brown, H. H. & Co., New Haven, Conn.
Goodell Pratt Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 28 Warren St., N. Y.
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers St., New York.
Stewart, L. S. Co., Athol, Mass.
Stevens, J., Arms & Tool Co., Chicopee, Mass.

Tools, Blacksmith and Wheelwright
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes
Clark, W. J. & Co., Salem, O.

Transom Openers
Ormsby, E. A., Melrose, Mass.

Tree Guard
Hartman Mfg. Co., 309 Broadway, N. Y.
Up-to-date Mfg. Co., Terre Haute, Ind.

Trolleys
Box, Alfred & Co., Philadelphia, Pa.

Trowels
Bishop, Geo. H. & Co., Cincinnati, O.
National Saw Co., Newark, N. J.

Trucks
Boston & Lockport Block Co., Lockport, Mass.
Kilbourne & Jacobs Mfg. Co., Columbus, Mass.
Lansing Wheelbarrow Co., Lansing, Mich.
Syracuse Chilled Plow Co., Syracuse, N. Y.
Variety Machine Co., Warsaw, N. Y.

Tab Hoops
Oatman Bros., Medina, Ohio.

Tube Expanders
Benderer, A. L. Sons, Wilmington, Del.

Tubes, Seamless Drawn Copper, Brass and Bronze
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph Clowes Co., Waterbury, Conn.

Tubing, Brass
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Irvine, Ellwood, 487 Broadway, N. Y.
Phoenix Tube Co., Brooklyn, N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron
Phoenix Tube Co., Brooklyn, N. Y.

Tubing, Seamless
Irvine Ellwood, 487 Broadway, N. Y.

Tubing, Steel
Heat Transmission Co., Danbury, Ct.
Irvine, Ellwood, 487 Broadway, N. Y.
Janney, Steinmetz & Co., Phila., Pa.
Lene's John S. Son & Co., 4 Fletcher St., New York, C. E. & Co., Phila., Pa.
National Tube Co., Pittsburgh, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Tumbling Barrels
Henderson Bros., Waterbury, Conn.
Northern Engineering Works, Detroit, Mich.

Turnbuckles
Cleveland City Forge & Iron Co., Cleveland, O.

Twist Drills
Cleveland Twist Drill Co., Cleveland, Mass.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Slocumb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland, O.

Twist Drill Grinders
Heald, L. S. & Son, Barre, Mass.
Washburn Shops of Worcester Polytechnic Inst., Worcester, Mass.

Union Couplings
Dart, E. M. Mfg. Co., Providence, R. I.

Upholsterers' Hardware
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Valves, Gas, Water and Steam
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Jenkins Bros., 71 John, N. Y.
Kennedy Valve Mfg. Co., 73 John St., N. Y.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

Varnish
Standard Varnish Works, 29 Broadway, N. Y.

Vegetable Slicers
Streeter, N. R. & Co., Rochester, N. Y.

Ventilating Fans
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Exeter Machine Wks., Boston, Mass.
Perkins, B. F. & Son, Holyoke, Mass.

Ventilating System
Ormsby, C. A., Melrose, Mass.

Ventilator Appliances
Howard & Morse, 45 Fulton St., N. Y.

Ventilators
Drouge G. Co., Bridgeport, Conn.
Merchant & Co., Inc., Philadelphia, Pa.
National Fancoast Ventilator Co., Phila., Pa.

Ventilator Openers
Ormsby, E. A., Melrose, Mass.

Vises
Athol Machine Co., Athol, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Hollan Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Lewis Tool Co., 44 Barclay St., N. Y.
Parker, Chas. Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay St., N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks
Cover Mfg. Co., West Troy, N. Y.
Cover's Saddlery Works, Farmer, N. Y.
Lane Bros. Co., Foughkeepsie, N. Y.
Morrow, P. C., Newport, Pa.

Washers
Hall's, Sam'l Sons, 229 West 10th St., N. Y.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Wilson & Smith, Worcester, Mass.

Washers, Lead
Milton Mfg. Co., Milton, Pa.

Washing Machines
Brammer, J. F. Mfg. Co., Davenport, Ia.
Clark, Quilen & Morse, Peoria, Ill.
Richmond Cedar Works, Richmond, Va.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Wash Tubs
Shepard, Sidney & Co., Buffalo, N. Y.

Watchman's Clocks
Nash, C. & Co., 127 Duane St., N. Y.
Waggoner Watchman Clock Co., Grand Rapids, Mich.

Water Gates
Kennedy Valve Mfg. Co., 73 John St., N. Y.

Water Wheels
Pooles, Robt. & Son Co., Baltimore, Md.

Weldless Steel Flanges
Latrobe Steel Co., Philadelphia, Pa.

Well Supplies
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Mass.
Lansing Wheelbarrow Co., Lansing, Mich.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Wind Mills
Flint & Walling Co., Kendallville, Ind.

Window Cord
Samson Cordage Works, Boston, Mass.

Window Fasteners
Stanley Works, New Britain, Conn.

Window Weights
Barney & Reed Mfg. Co., Boston, Mass.

Wire
Cleveland Wire Spring Co., Cleveland, O.
Dillon-Griswold Wire Co., Sterling, Ill.
Grand Crossing Tack Co., Grand Crossing, Ill.
Kidd Bros. & Hargner Steel Wire Co., McKees Rocks, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
National Wire Co., New Haven, Ct.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Reading Screw Co., Norristown, Pa.
Spencer Wire Co., Worcester, Mass.
Stewart Wire Co., Easton, Pa.
Summit Wire Co., Cuyahoga Falls, O.
Townsend, C. C. & E. P., New Brighton, N. Y.
Trenton Iron Co., Trenton, N. J.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains
Bridgeport Chain Co., Bridgeport, Ct.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Derby, Edward & Sons, Philadelphia.
Essey Wire Works Co., 66 Fulton St., New York.
Gilbert & Bennett Mfg. Co., 44 Cliff St., New York.
Howard & Morse, 45 Fulton St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., New York.
Ludlow Saylor Wire Co., St. Louis, Mo.
Michigan Wire Cloth Co., Detroit, Mich.
New Freedom Wire Cloth Co., New Freedom, Pa.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler's Sons, Buffalo, N. Y.
Tyler, W. S. Co., Cleveland, O.
Wickwire Bros., Cortlandt, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters
Chandler & Farquhar, Boston, Mass.
King, J. M. & Co., Watertown, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies
McFarland, Wm., Trenton, N. J.

Wire Drawing Machinery
Morgan Construction Co., Worcester.
Mossberg & Granville Mfg. Co., Providence, R. I.

Wire Fences—(See Fencing, Iron and Wire.)

Wire Goods
Brooks, M. S. & Sons, Chester, Conn.
Darby, Edward & Sons, Philadelphia.
Gilbert & Bennett Mfg. Co., 44 Cliff St., New York.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Michigan Wire Cloth Co., Detroit, Mich.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Forming Machinery
Automatic Machine Co., Bridgeport, Ct.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Ct.
Snuster, F. B. Co., New Haven, Conn.

Wire Mill Machinery
Braddock Mch. & Mfg. Co., Braddock, Pa.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Mats
Hartman Mfg. Co., 309 Broadway, N. Y.

Wire Nails
American Screw Co., Providence, R. I.
Dillon-Griswold Wire Co., Sterling, Ill.
Grand Crossing Tack Co., Grand Crossing, Ill.
National Wire Co., New Haven, Ct.
Sommit Wire Co., Cuyahoga Falls, O.
Townsend, C. C. & E. P., New Brighton, N. Y.

Wire Nail Machinery
Braddock Mch. & Mfg. Co., Braddock, Pa.
Miller, H. J., Bridgeport, Mass.
National Machinery Co., Lima, Ohio.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Parts
Jenkinson, R. C. & Co., Newark, N. J.

Wire Reels Adjustable
Shuster, F. B. Co., New Haven, Conn.

Wire Rods, Steel
Ashland Steel Co., Ashland, Ky.
Consolidated Iron & Steel Co., Bristol, Pa.
National Wire Co., New Haven, Conn.
Nicol, J. & Co., 59 61 Wall St., N. Y.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Spencer Wire Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel
American Steel & Wire Co., Chicago, Ill.
Broderick & Bacon Rope Co., St. Louis.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Lechen & Sons Rope Co., St. Louis.
Macomber & Whyte Rope Co., Chicago, Ill.
Trenton Iron Co., Trenton, N. J.
Wat-rbury Rope Co., 69 South St., N. Y.
Williamsport Wire Rope Co., Williamsport, Pa.

Wire Straightening and Cutting Machinery
Shuster, F. B. Co., New Haven, Conn.

Wire Stretchers
Arcade Mfg. Co., Freeport, Ill.

Wood Hardware
Bliss, R. Mfg. Co., Pawtucket, R. I.

Wood Screw Machinery
Cook, A. S. & Co., Hartford, Conn.
Fox Machine Co., Grand Rapids, Mich.

Wood Working Machinery
Defiance Mch. Works, Defiance, O.
Fav, J. A. & Egan Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Woodenware
Richmond Cedar Works, Richmond, Va.

Wrenches
Atlas Pipe Wrench Co., 121 Liberty St., N. Y.
Reiden Machine Co., New Haven, Conn.
Chicago House Wrecking Co., Chicago, Ill.
Coet Wrench Co., Worcester, Mass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Keystone Drop Forge Co., Phila., Pa.
Keystone Mfg. Co., Buffalo, N. Y.
Peck, Stow & Wilcox Co., 31 Murray St., N. Y.
Star Mfg. Co., Carpentersville, Ill.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.

Wrenches, Adjustable S Pipe
Keystone Mfg. Co., Buffalo, N. Y.

Zinc Nails
Phillips, E. & Sons, So. Hanover, Mass.

Zinc Plates
Phillips, E. & Sons, So. Hanover, Mass.

Frankford Steel Co., Philadelphia, Pa.
Hobson, Houghton & Co., 96 John St., N. Y.
Jesse, Wm. & Sons, Sheffield, England, or 91 John St., New York.
Jones & Laughlin, Ltd., Pittsburgh, Pa.
Kidd Bros. & Hargner Steel Wire Co., McKees Rocks, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lorain Steel Co., Lorain, Ohio.
Lukens Iron & Steel Co., Coatesville, Pa.
Nash, Geo. & Co., Chicago.
National Steel Co., Battery Park Building, N. Y.
Newkirk, J. B. & Co., Philadelphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Republic Iron & Steel Co., Chicago, Ill.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlaw, S. & C., Sheffield, England.
Wilmot & Hobbs Mfg. Co., Bridgeport, Manufacturers' Agents.
Ogden & Wallace, 577-583 Greenwich St., New York.
Snyder, W. P. & Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

Steel, Self Hardening
Denman & Davis, 85-87 John St., N. Y.

Steel Rails
Lorain Steel Co., Lorain, Ohio.

Steel Stamps and Stencil Dies
Eucker, L. A. Stamp Wks., Little Ferry, N. J.
Ness, Geo. M., Jr., 61 Fulton St., N. Y.
Schwerdt & Siebert, Bridgeport, Conn.

Steel, Tool
Braeburn Steel Co., Braeburn, Pa.
Canton Steel Co., Canton, Ohio.
Crescent Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jesse, Wm. & Sons, Sheffield, England, 91 John St., N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Nash, Geo. & Co., Chicago.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

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Curtis & Curtis, Bridgeport, Conn.
Hollands Mfg. Co., Erie, Pa.
Jones & Lauson Mch. Co., Springfield, Vt.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Winter Bros., Wrentham, Mass.

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Gilmour, J., Bennett Bldg., N. Y.

Stone Working Machinery
Patch, F. H. Mfg. Co., Rutland, Vt.

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Head, A. P. & Co., Chicago, Ill.

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Warren, J. M. Mfg. Co., Chicago, Ill.

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Stave Linings
Ostrander Fire Brick Co., Troy, N. Y.

Stove Pipe Thimbles
Cheney, S. & Son, Manlius, N. Y.

Stoves, Oil, Vapor and Gasoline
Schneider & Trenkamp Co., Cleveland, Ohio.

Straightening Machines, Wire and Sheet Metal
Shuster, F. B. Co., New Haven, Conn.

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Boston Bridge Works, Boston, Mass.
Du Bois Iron Works, Du Bois, Pa.
Eastern Bridge & Structural Co., Worcester, Mass.
Forest City Steel & Iron Co., Cleveland, Ohio.
Illinois Steel Co., Chicago, Ill.
Moseley Iron Bridge & Roof Co., 29 Cortlandt St., N. Y.
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Phoenix Iron Co., Philadelphia, Pa.
Ritter-Conley Mfg. Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.
West Side Foundry Co., Troy, N. Y.

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Mattliessen & Heiler Zinc Co., La Salle, Ill.

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Shelton Co., Birmingham, Conn.

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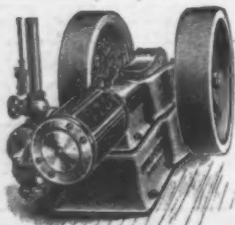


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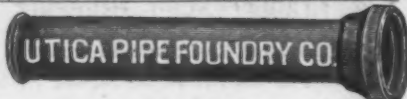
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